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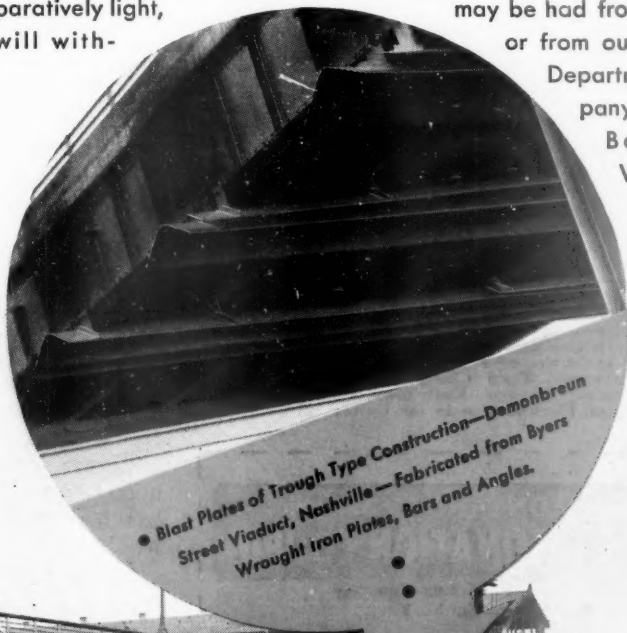
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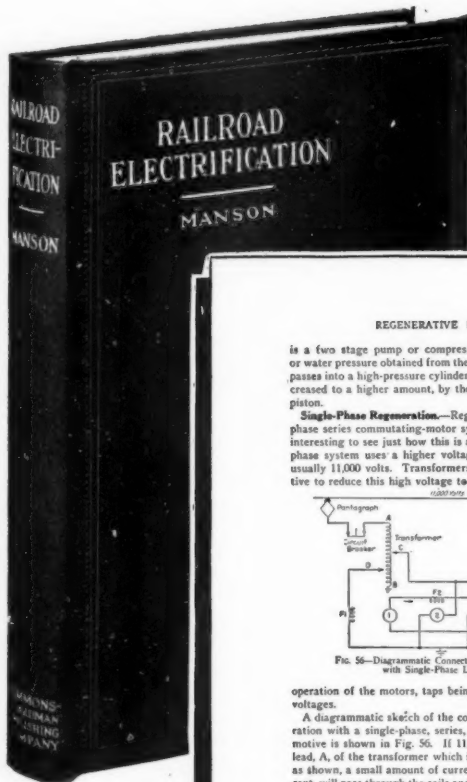


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By Arthur J. Manson

Assistant Sales Manager, Transportation Department,  
Westinghouse Electric & Manufacturing Company



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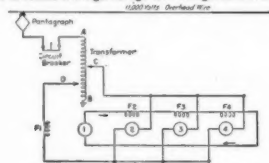
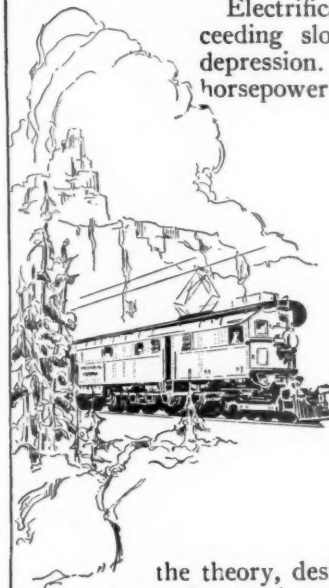


FIG. 56—Diagrammatic Connections for Regeneration with Single-Phase Locomotive.

operation of the motors, taps being taken out at the proper voltages.

A diagrammatic sketch of the connections used for regeneration with a single-phase, series, commutator-type of locomotive is shown in Fig. 56. If 11,000 volts is applied at the lead, A, of the transformer which is represented by the loops as shown, a small amount of current, known as exciting current, will pass through the coils and out at the lead B, which is connected to the ground. If it were possible to measure, beginning at lead, A, the voltage throughout all of the turns of the transformer, it would be found that there is a decrease in voltage as progress is made along the coils from A toward B until zero voltage is obtained at B. Thus it is possible to get



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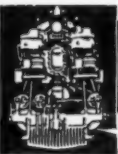
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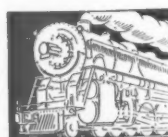
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## RAILWAY AGE

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# Faster Trains Bring Big Rise In Train and Engine Hourly Pay

Railways incur most of their labor expense by the man-hour. Thus, in a shop, if a new machine is purchased, the production per man-hour, without additional exertion on the part of employees, increases while the labor expense does not. Accordingly, there is a saving in operating cost which is attributable to the new machine. Some of this saving must be set aside to offset interest and amortization on the cost of the new machine—but there should be a reduction in operating cost over and above such charges. As operating cost is thus reduced the condition of the whole industry improves. More money is available which may be passed on to railway patrons in the form of rate reductions, thus increasing their patronage and stimulating railway employment. Or some of the savings made may be used to pay dividends or interest, or to increase wages, or to finance other new and improved facilities which will increase public patronage, again increasing employment, or spent on better maintenance of equipment and permanent structures, which also will increase employment.

### Faster Machines, with No Change in Piece Work Rate

But not all employees are paid by the hour. Train and engine crews are paid by the mile unless train speeds fall below  $12\frac{1}{2}$  miles per hour in freight service or 20 miles per hour in passenger service. When this ratio between miles and hours was established in 1917, average freight train speed was only about 10 miles per hour, so the average train crew was paid by the hour and not by the mile. Since that time, however, the average speed in miles per hour has steadily increased until in 1935 it was 16. This average, it is to be noted, includes local freight trains. The average speed in through freight service is, of course, much greater.

This increase in speed of trains has not been accomplished by any greater exertion on the part of train and engine employees. Instead, it has been the result of billions of dollars expended on improved track, improved signaling, more modern equipment,

and of more efficient performance by the whole railway organization. These improved facilities and more efficient methods are the combined contribution of railway investors and all railway employees. But the benefits have not been distributed equitably among those who have helped to make them possible. Instead, by reason of the retention of an outmoded scheme of wage payment in train service, the benefits of improved efficiency have to a very large degree been heaped in the laps of through freight and passenger train and engine crews. Wage payments for covering 100 miles are approximately the same in 1936 as they were in 1926 or 1927, but the 100 miles is covered, by the average through freight or passenger train, in much less time today than it was ten years ago. The clerk, the machinist, the track-walker, the car inspector receive about the same pay per hour today as they did ten years ago, but the hourly earnings of through train and engine crews have greatly increased.

### Train and Engine Employees a High Type

Train and enginemen are the highest type of industrial employees known to America. A finer type of sober, intelligent, conscientious workmen it would be impossible to find anywhere. No criticism of them is implied in calling attention to the manner in which their hourly wages are rising out of all proportion to those of other employees. But a trainman or an engineman today is, presumably, no more efficient or valuable in comparison to other railway employees than he was in 1926. In that year the average passenger train and enginemen received 98 per cent more per straight-time hour worked than the average received by all employees. In 1935 this differential had climbed to 118 per cent. In 1926 the average employee in through freight service received 45 per cent more straight time hourly compensation than the average of all employees; in 1935 this differential had soared to 84 per cent. To justify these widening differentials it would have to be shown that train and engine service employees had correspondingly increased in ef-

iciency as compared with railway employees as a whole. Is there a scintilla of evidence that this has happened?

The accompanying table shows the averages of straight time hourly earnings for each class of train and engine service employees (yard service omitted)

service there is still a substantial proportion of payment made by hours instead of miles. In 1926 the average employee in through freight service earned 5 per cent more per hour straight time than the employee in local service. In 1935 the differential in favor of through service had increased to 22 per cent.

### How Higher Speeds Are Increasing Train and Engine Service Wages

(Average Straight Time Earnings in Road Service per Straight Time Hour Actually Worked)

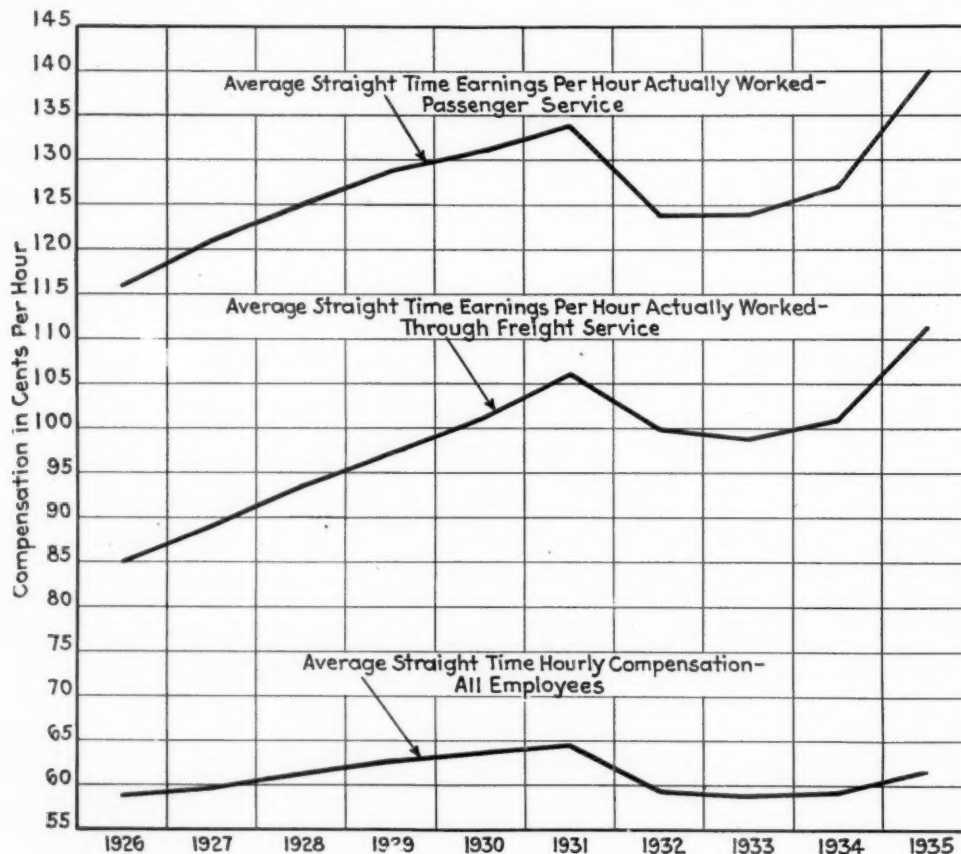
	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935
<b>Passenger Service:</b>										
Engineers .....	\$1.51	\$1.55	\$1.64	\$1.67	\$1.71	\$1.73	\$1.59	\$1.59	\$1.64	\$1.80
Firemen .....	1.18	1.24	1.29	1.33	1.36	1.39	1.29	1.29	1.33	1.47
Conductors .....	1.25	1.31	1.31	1.36	1.38	1.41	1.30	1.31	1.34	1.47
Assistant Conductors .....	1.09	1.17	1.18	1.16	1.15	1.16	1.06	1.07	1.09	1.18
Baggagemen .....	.92	.98	.99	1.02	1.04	1.06	.98	.97	1.00	1.09
Brakemen .....	.89	.93	.94	.98	1.00	1.02	.94	.95	.97	1.07
All Passenger Train and Enginemen .....	1.16	1.21	1.25	1.29	1.31	1.34	1.24	1.24	1.27	1.40
<b>Through Freight Service:</b>										
Engineers .....	1.09	1.12	1.19	1.23	1.28	1.33	1.25	1.25	1.27	1.39
Firemen .....	.82	.87	.91	.93	.97	1.01	.96	.95	.97	1.06
Conductors .....	.90	.95	.98	1.01	1.06	1.11	1.06	1.05	1.07	1.17
Brakemen .....	.71	.75	.77	.80	.84	.88	.84	.83	.85	.93
All Through Freight Train and Enginemen .....	.85	.89	.93	.97	1.01	1.06	1.00	.99	1.01	1.11
<b>Local Freight Service:</b>										
Engineers .....	1.03	1.04	1.09	1.10	1.12	1.14	1.05	1.04	1.06	1.15
Firemen .....	.77	.80	.82	.83	.84	.86	.79	.79	.80	.87
Conductors .....	.89	.92	.93	.95	.96	.98	.91	.90	.91	.98
Brakemen .....	.70	.73	.74	.75	.76	.77	.72	.71	.72	.78
All Local Freight Train and Enginemen .....	.81	.84	.85	.87	.88	.90	.83	.83	.83	.91

\* Compensation (Straight Time Paid For) Divided by Straight Time Hours Actually Worked—Basic Data from I.C.C. Wage Statistics.

from 1926 to 1935. The trend, it will be seen, has been steadily upward, except for the temporary wage reduction in 1932-35, throughout the whole period, in spite of the fact that basic pay was virtually constant. It is to be noted that the increase in hourly earnings in local freight service has been relatively small. In such

Has the relative nature of the work performed by through and local crews changed so completely in the intervening period as to justify the growth of such discrimination in compensation?

In drawing attention to this matter, we have no desire to be dogmatic or unduly critical. Compensation



Hourly Earnings in Train and Engine Service Compared with Average for All Employees

The bottom curve on the chart, that of straight time earnings of all employees, is not an ideal base with which to contrast the other two because the first two are contained in it. Offsetting this factor, which would minimize the contrast, is the fact that the bottom curve shows hourly earnings paid for and includes time paid for but not worked. However, it is only in passenger and through freight service that time paid for but not worked is growing rapidly in proportion to total straight time compensation.

tion of train and engine crews on a basis of miles or hours has been likened to piece-work, and the analogy is a close one. But in train service it has been piece-work where the piece-work rate has remained constant in spite of the introduction of improved machinery, and where the saving in labor-time has been absorbed by one group of employees in the form of shorter hours. In the case of enginemen on high speed trains it may, perhaps, be conceded that the effort put forth bears a closer relation to miles traversed than to hours on duty; but this certainly is not true with trainmen, or with enginemen when speeds are moderate.

The problem involved is a great deal more important than that of mere abstract justice in relative compensation of various classes of railway employees. Costs per train-mile are the frontier on which the battle between the railroads and their competitors is waged. The great advantage of the truck is flexibility—frequent service. There are countless instances where the railways could recapture traffic if they could afford to run a train, which they cannot afford to do with present arbitrarily high train-mile costs.

#### Existing Rules Enforce Unemployment

Let us take an hypothetical, but quite typical, example. A through train crew comes in to a terminal having covered 150 miles in 5 hours. Ten miles from this terminal down a branch line a shipment of 10 cars of stock is available if the railroad can pick it up. Under present practice the through crew has earned 12 hours, or 1½ days' pay in its 5 hours of work, and has

finished work for the day. The railroad cannot afford to call out another crew and give it a day's pay to get the 10 cars of stock; but it cannot call out a crew without paying it for a day—so the trucks get the business. If present practice were altered so that the through crew could be sent for the stock as a part of its duty in return for receiving 1½ days' wages, the railroad would get some business it now loses entirely. No injustice or hardship would be involved for the train crew, because they would still earn their 12 hours' pay in 6 or 7 hours. And that 10 cars of stock would help make more employment for clerks, for trackmen and for shop employees. These employees have shared in bringing about the better railroading which puts the through train over the road at a saving of several hours between terminals. Why should they be denied any benefit from the improved efficiency?

Modification of train service rules so that hours of work done would more nearly conform to hours paid for would give the railroads a flexibility sorely needed in recapturing business from trucks. Every class of employee would benefit, and in particular would railroad employment increase. Every dollar paid for time not worked means a dollar less with which to employ men who would be glad to work for it, and whom the railroads would be only too glad to hire if they could, but who are now unemployed because continuance of an outmoded basis for paying employees in train service makes employment of more men in railroad service as a whole impossible.

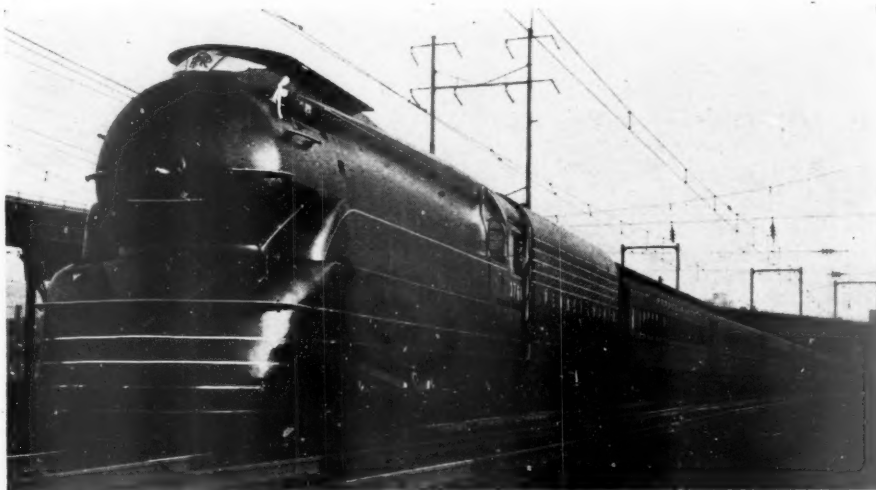


Photo by Robert Dudley Smith

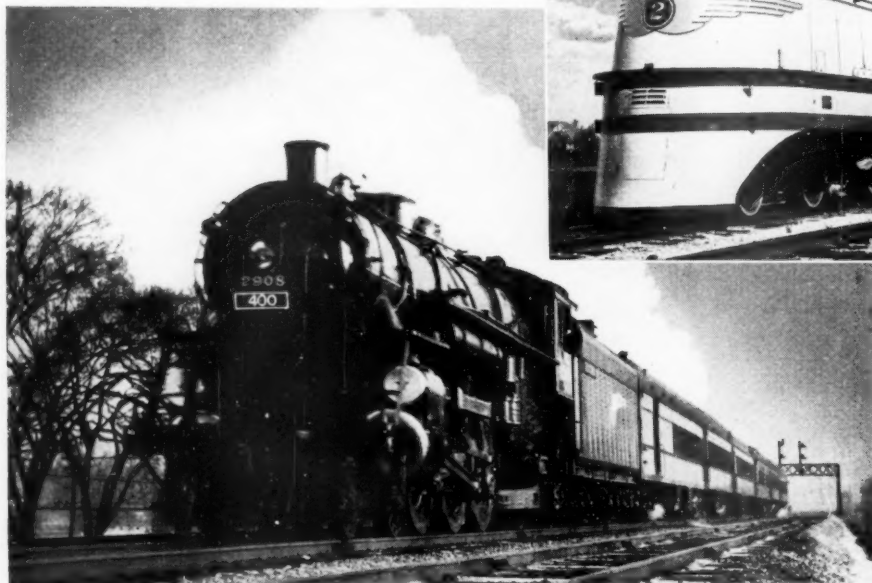
Pennsylvania Train Hauled by New Streamlined K4s Pacific Type Locomotive



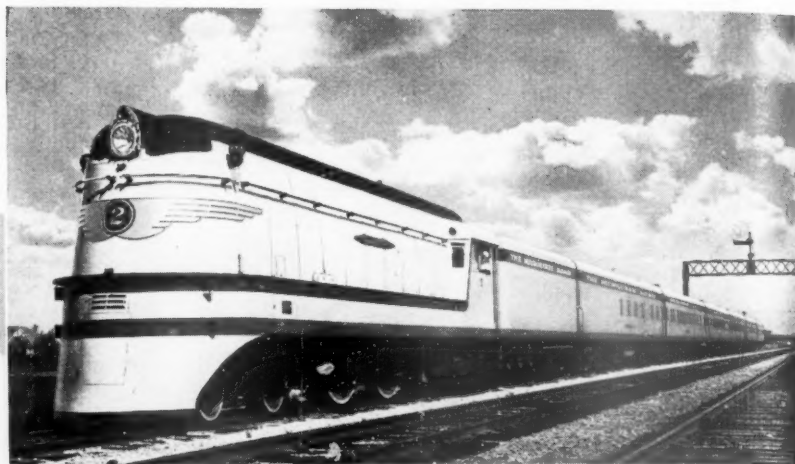
# Signaling for High-Speed Trains\*

By Burt T. Anderson

Director,  
Bureau of Railway Signaling Economics,  
New York



The "400" on the Chicago & North Western



The Hiawatha on the Milwaukee

The longer braking distances require extension of signal stopping spaces, a problem effectively solved by use of multiple-aspect signaling

THE decided increase in average train speeds throughout America during the last five years is without parallel in the world. Whereas in 1930 there were only 29 regularly assigned runs, totaling 1,106 miles, timed at 60 m.p.h. or more, the number at the end of 1935 had increased to 413, with a total mileage of 19,279.† Practically all of this mileage on which high-speed trains are operated is equipped with automatic block signaling, and about two-thirds of the mileage is also equipped with automatic train control or automatic cab signaling. However, when introducing faster train schedules, certain changes and additions are in many cases necessary in order to insure proper safety and efficiency. Some of the problems will be dealt with in detail in the following explanation.

Within the past two years, increased stopping distance has been given much attention in connection with the advent of streamlined trains. However, the most serious problems have been brought about by the high-speed passenger trains, using standard heavy equipment, and especially the high-speed freight trains which require the longer braking distances, because not only the speeds but the weight and length of these trains have been increased. Thirty years ago when the average speed of freight trains was about 20 m.p.h. and that of passenger trains 45 to 60 m.p.h., automatic signals were installed with blocks from 3,000 to 5,000 ft. long. The introduction of higher train speeds made it necessary

for many railroads to check their stopping distances and, in certain cases, to lengthen the signal stopping distances to from 4,000 ft. to 8,000 ft., so as to allow adequate braking distance with a reasonable margin for variations in braking equipment and the way of handling trains.

## Methods Used to Lengthen Signal Distances

Increasing the signal stopping distance may be accomplished by using one or more of five methods as suggested in a report presented at the recent convention of the Signal Section, i.e., (1) relocating the signals to lengthen the blocks; (2) eliminating alternate signals; (3) overlapping the control; (4) providing duplicate restrictive indications; (5) increasing the number of restrictive indications.

The first four of these methods result in extending the spacing between following trains, with resultant decrease in the track capacity. Obviously, if there are many freight trains operating at the lower ranges of speed of from 30 to 45 m.p.h., the elimination of every alternate signal as a means of obtaining adequate stopping distance for a few high-speed trains will materially reduce the capacity of the line. Furthermore, the stopping distance obtained by eliminating alternate signals will be more than that required by the high-speed trains.

For example, assume a track layout with signals 1.5 miles apart and giving three indications: Stop, Approach, and Proceed. If they are to run on clear signals, trains must keep at least three miles apart. In order to provide for increased stopping distance, let us assume the elimina-

\* Abstract of paper presented before the New England Railroad Club, Boston, Mass., on April 14.

† For details as to speed and lengths of various runs, see *Railway Age* of April 4, page 583.

tion of every second signal which results in the signals being three miles apart, requiring trains to operate six miles apart when running under clear signals. The time spacing of a few typical trains operating at varying speeds will be approximately as follows:

Speed of Train	Minutes Apart
Passenger, 100 m.p.h.....	3.6
Passenger, 60 m.p.h.....	6
Freight, 60 m.p.h.....	6
Freight, 45 m.p.h.....	9
Freight, 30 m.p.h.....	12
Freight, 20 m.p.h.....	18

The practice of providing duplicate restrictive aspects, i.e., a caution aspect on two signals in approach to one indicating stop, is at best a temporary expedient as a means of lengthening signaling spacing. The disadvantages of this practice are that the track capacity is decreased and there is a lack of proper information to following trains on close headway.

Therefore, the most satisfactory solution, in the majority of instances, is to increase the number of restrictive aspects by using three-block or four-block signaling. Such a multiple-aspect system provides a series of four or more aspects, permitting an engineman to reduce the speed of his train gradually and at the same time operate trains at the highest speed consistent with safety. The Standard Code provides an additional aspect for three-block signaling which can be added to an existing two-block system. This practice of using multiple aspects over and above two-block signaling has been adopted on extended sections of the New York Central, the Boston & Maine, the Pennsylvania, the Reading, the Central of New Jersey, the Delaware, Lackawanna & Western, the Chesapeake & Ohio, the New York, New Haven & Hartford, the Chicago, Milwaukee, St. Paul & Pacific, the Chicago & North Western, the Erie and several other roads. The adoption of shorter blocks and multiple aspects on heavy-traffic territories, especially where train speeds vary, has proved to be of decided advantage in relieving congestion and expediting trains in an economical manner.

#### An Example of Four-Aspect Signaling

An interesting example of the principles involved in providing increased stopping distance by means of multiple-block signaling is afforded on the Erie between Newburg Junction, N. Y., and Suffern, on a 14-mile section of double track between sections of a four-track line. The old signaling was of the lower quadrant two-position semaphore type installed in 1909, the home signal blocks being about two miles long with a distant signal 2,800 ft. in approach of each home signal. Following trains were, therefore, spaced 2.5 miles apart and even with this minimum spacing, there was not proper stopping distance on the descending grade of 0.6 to 1.14 per cent on the eastward track. About 18 passenger and 12 freight trains were operated in each direction daily and the trains were bunched in certain periods of the day. The grade increased the stopping distance of heavy fast trains to such an extent that they could not be spaced closely with the old signaling arrangements, and a "bottleneck" was created in operating trains over the division.

In order to increase the track capacity and improve the safety of train operation, new color-light signals were provided with 5,800-ft. blocks, using two units to provide four indications on the downgrade eastward track, and one-unit three-indication signals with 6,000-ft. blocks on the ascending westward track. The new

signaling not only allows adequate stopping distance with minimum spacing between following trains but affords the engineman of a freight train adequate warning to control the speed of his train in conformance with the signal indications so as to keep his train moving with safety. The new signaling has permitted the present traffic of 60 trains per day to be handled without delays and the operation has been very satisfactory.

#### Changes on Account of High Speed

Several roads which have inaugurated new trains on especially fast schedules have made extensive changes in their signaling. On the route of the Chicago, Burlington & Quincy's Zephyr between Chicago and St. Paul, Minn., 153 semaphore caution signals in a 290-mile territory, installed 15 to 25 years ago with 2,500-3,000-ft. blocks, were moved to obtain greater stopping distance, while in a more modern 103-mile color-light signal territory, only 4 automatic block signals were moved on account of insufficient stopping distance.

The Chicago, Milwaukee, St. Paul & Pacific revised the signaling on 78 miles of road outside of the terminal limits between Chicago and Milwaukee, Wis., to extend the blocks from an average of 5,100 ft. to approximately 7,600 ft., a total of 55 signals being eliminated. In the suburban territory between Rondout, Ill., and Chicago, the blocks are about 6,000 ft. in length, with 70 to 80 trains per day, and it is planned to shorten the blocks and provide four-indication signaling. From Milwaukee to St. Paul, the blocks averaged two miles, so that changes were not required except at interlocking plants, yards and some other points, but 28 signals were removed and 24 relocated to provide adequate stopping distance.

The Chicago & North Western replaced 70 miles of enclosed disk signals with modern color-light three-aspect signaling, with blocks averaging about 6,000 ft. In the suburban heavy-traffic territory near Chicago, 9 miles of three-block four-aspect signaling with 3,000-ft.



Four-Aspect Signaling on the Erie



blocks were provided. On the 154-mile territory north of Milwaukee, the modern three-position semaphore signaling required only a few changes to provide adequate stopping distance. Braking tests indicated that signals properly located for existing 70-mile speeds of heavy 15-car trains would require little change for a 5 or 7-car train operating at 90 m.p.h.

As a part of the electrification program between New York and Washington, the Pennsylvania installed a coder system of automatic block signaling and cab signaling, using blocks averaging 8,000 ft. with three-aspect, two-block signaling for train speeds of 90 m.p.h. Between Ft. Wayne, Ind., and Chicago, the Pennsylvania rearranged and lengthened the double track automatic blocks from about 5,000 to 8,500 ft. It should be pointed out that while blocks have been lengthened and stopping

necessary to provide modern light-weight train-control and cab-signal equipment to meet the requirements of the various systems. For example, the Portland Rose of the Union Pacific required a two-speed control and cab-signal system for operation over the Chicago & North Western between Chicago and Omaha, Neb., a cab-signal system between North Platte, Neb., and Cheyenne, Wyo., on the Union Pacific, and a speed-control and cab-signal system between The Dalles, Ore., and Portland, over the Oregon-Washington Railroad & Navigation tracks. The new Union Pacific train, City of San Francisco, to go in service shortly, will have an additional type of automatic train-stop system for operation over the Southern Pacific in California. A Baltimore & Ohio Diesel engine was originally designed for service between New York and Washington, D. C., or Chicago and St. Louis, Mo., which required operation over two types of automatic train-stop systems. The Hiawatha of the Milwaukee is equipped with a cab-signal system, while the Atchison, Topeka & Santa Fe Super Chief is equipped with an automatic train-stop and cab-signal system.

The Rebel of the Gulf, Mobile & Northern operates into New Orleans, La., over the New Orleans & North Eastern, and is equipped with an automatic-stop system of the intermittent type. The Abraham Lincoln of the Alton and the Century of Progress of the Chicago & Eastern Illinois operate between Chicago and St. Louis in automatic train-stop territory.

The high efficiency of the automatic train-control and cab-signal devices in service day in and day out, year by year, under extreme climatic, traffic and high-speed service conditions, presents a record of which railroad men may justly be proud. These devices increase the safety of train operation, facilitate on-time performance under unfavorable weather conditions, particularly in foggy territory, besides increasing the morale of the train crews, and provide the most modern type of protection for high-speed train operation.

The operation of trains at speeds of 100 m.p.h. and over, demands the most modern locomotives and train equipment, the best track and roadway available and modern signaling. To obtain the most satisfactory operation, train movements must be directed with the least possible delay, such as is only possible with centralized traffic control, remote control and interlockings with modern automatic block signaling. Trains must be diverted from one track to another, where necessary, at high speed, over crossovers or turnouts handled by power with adequate signal protection. To insure additional safety, the highway grade crossings must be protected in the most approved manner and train control and cab signals installed for the greatest safety. Modern signaling is designed for high-speed, safe train operation and should never be permitted to restrict efficient train operation. These practices are not suggested recommendations. They represent what has actually been done and is being done to make railroad travel the safest in the world.

THE HOUSEHOLD REMOVAL BUSINESS of British railways has more than trebled during the past three years and the railways' household removal organization has grown to be the largest in the country, according to a recent statement. The British railways in this connection undertake to give a complete service, including, if desired, packing and unpacking, the hanging of pictures, the laying of linoleum and carpets, etc. Similar services are also available for the complete removal of farms and in addition a 33 1/3 per cent reduction in passenger fares to the new destination is granted to every member of the household involved.



Multiple-Aspect Signaling on the Boston & Maine

distance increased, the modernization of the older signaling systems has also provided improved signal indications and a reduction in the expense of signal maintenance and operation.

In instances where automatic signaling is not in service on portions of the routes over which fast scheduled trains are to be operated, some roads are making extensive signal installations. For example, on the route of the Marathon, a fast day train between Omaha, Neb., and Kansas City, Mo., the Missouri Pacific installed 110 miles of automatic signaling in 1935, and the remaining section of 24 miles not previously so protected is to be equipped this year.

#### Train Control and Cab Signaling

The operation of high-speed passenger trains in automatic train-control and cab-signal territory made it





One of the "Coffee Shop" Dining Cars

## Union Pacific Modernizes Cars for Challenger

Popularity and profit of solid coach and tourist sleeping car train justifies expenditure of \$600,000

AS a result of the success of the Challenger since its inauguration in August, 1935, as an exclusive coach and tourist sleeping car train between Los Angeles, Cal., and Omaha, Neb., the Union Pacific has just spent \$600,000 for remodeling its cars for this train. On May 15, these cars will replace the present equipment and the new train will be operated through to Chicago. It will leave Los Angeles at 8 p. m. and will arrive in Chicago at 8:45 a. m. the fourth day covering the 2,298 miles in 58¾ hr. Returning, it will leave Chicago at 9:30 p. m. and will arrive in Los Angeles at 8:30 a. m., 61 hr.

The Challenger is the outgrowth of popular demand for improved coach and tourist car facilities. Last summer, the Union Pacific transferred the coaches and tourist sleeping cars from the Los Angeles Limited into another train which it operated for a time as a second section of that train. A dining car with exceptionally low prices was added to this section, redecorated in "coffee shop style" with colorful composition-topped tables. Then followed a series of innovations in coach service which became so popular that the second section of the Los Angeles Limited became a regularly operated train, the Challenger.

The innovations on the Challenger are:

(1) Special coaches for the exclusive use of women and children, with large dressing rooms and smoking lounges.

(2) A graduate registered nurse, or stewardess,

whose services are available to all passengers without charge.

(3) Porter service throughout the train.

(4) Prohibition of tip acceptance by "red caps" handling the hand baggage of coach passengers.

(5) Elimination of "penny-in-the-slot-machine" drinking cups and the installation of cups without charge. In the remodeled cars, electrically refrigerated water coolers, manufactured by the General Electric Company, have replaced the old ice-cooled tanks. The new coolers are so designed that a foot lever controls the flow of water from the spigot so that the hands are free.

(6) Free pillow service for all coach passengers.

(7) A new lighting system providing for the dimming of lights throughout the train during sleeping hours. In the new coaches, aisle lights equipped with "milk" globes give indirect lighting. These are supplemented by side light fixtures located in the baggage rack support and containing a white and a blue lamp. The blue light is used during sleeping hours because it is found to be conducive to sleep and rest.

(8) The pouching of all tickets by conductors in the same manner as on Pullman trains so that passengers will not be troubled or annoyed enroute.

(9) The elimination of the calling of stations during sleeping hours. Passengers due to leave the train are awakened individually by trainmen so that other passengers are not disturbed.

(10) The conversion of the dining cars, during the



One of the Coaches—Blue Lights are Located in the Baggage Rack Brackets

non-meal-serving hours, into lounge and recreation cars.

(11) Air-conditioning equipment in every car.

(12) Deluxe type reclining and adjustable seats in all coaches.

(13) Low-cost meals. Breakfast is 25 cents, luncheon 30 cents and dinner 35 cents.

During the eight months in which this train has been in operation, it has carried an average of more than 100 passengers per day in each direction and has attained the achievement of having the best earning record of any Union Pacific passenger train. Its popularity is further attested to by the fact that 78,322 persons visited the train when its remodeled equipment was exhibited at nine towns between Omaha and Los Angeles from March 22 to April 1.

The consist of the Challenger includes two or more cars devoted to the exclusive use of women traveling alone and mothers with small children; three cars for occupancy by both men and women, two or more modernized tourist sleeping cars and a "coffee shop" dining car. To supply these cars for the seven units of the train 69 cars, including 47 coaches, 16 tourist sleeping cars and 5 dining cars, were rebuilt and modernized.

While the outward appearance of the cars has not been changed, each car has "The Challenger" inscribed



Each Coach Devoted Exclusively to the Use of Women, Has a Smoking and Dressing Room

on it in large letters. For the interior decoration of the cars, five distinctive color schemes have been employed. Silver, blue, beige, brown, taupe and natural wood are the color motifs and each is accompanied with appropriate tapestries, curtains and floor coverings of a modern but simple design. Roomy comfort is a distinguishing feature of the latest style seats which are of the adjustable, reclining type with form-fitting upholstery.

In each of the coaches which are devoted exclusively to the use of women, there is a large smoking and dressing room with comfortable, individual lounging chairs. In the general coaches there are also large dressing rooms for women as well as comfortably equipped lounging and dressing rooms for men. Porcelain sanitary equipment is used throughout the train.

## Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended April 18 totaled 642,657 cars, an increase of 20,519 cars as compared with the total for the week before and an increase of 31,516 cars, or 5.2 per cent, as compared with the corresponding week of last year. All commodity classifications except coal and ore showed increases over last year's figures, while all except coal and coke showed increases as compared with the week before.

The summary, compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading			
For Week Ended Saturday, April 18, 1936			
Districts	1936	1935	1934
Eastern .....	148,912	143,741	140,138
Allegheny .....	132,232	118,011	117,893
Pocahontas .....	45,082	42,719	42,092
Southern .....	95,834	91,151	88,288
Northwestern .....	74,006	75,819	69,752
Central Western .....	93,060	88,736	84,959
Southwestern .....	53,531	50,964	48,583
Total Western Districts.....	220,597	215,519	203,294
Total All Roads .....	642,657	611,141	591,705
Commodities			
Grain and Grain Products .....	30,177	29,426	26,307
Live Stock .....	12,972	12,500	18,689
Coal .....	109,800	115,341	102,207
Coke .....	6,827	6,431	5,632
Forest Products .....	31,656	26,267	23,921
Ore .....	9,569	11,829	8,430
Merchandise L.C.L. ....	161,833	159,815	165,836
Miscellaneous .....	279,823	249,532	240,683
April 18 .....	642,657	611,141	591,705
April 11 .....	622,138	586,568	579,981
April 4 .....	613,867	545,456	559,070
March 28 .....	600,487	616,520	610,190
March 21 .....	566,808	607,178	610,036
Cumulative Total, 16 Weeks .....	9,785,876	9,248,083	9,295,924

### Car Loading in Canada

Car loadings in Canada for the week ended April 18 totaled 44,533 cars as against 40,283 cars in the sixteenth week in 1935 and 40,235 cars in the previous week, according to the compilation of the Dominion Bureau of Statistics. Each of these latter weeks contained a holiday (Good Friday) which affects the comparisons.

	Total Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
April 18, 1936.....	44,533	24,970
April 11, 1936.....	40,235	24,411
April 4, 1936.....	44,345	25,287
April 20, 1935.....	40,283	24,038
Cumulative Totals for Canada:		
April 18, 1936.....	673,371	370,201
April 20, 1935.....	683,161	367,088
April 21, 1934.....	656,946	373,323

February 17—Fourteen Days Following the Letting of the Contract, the First Girder, Fabricated in the Interim, Was in Place



## Two Bridge Spans Replaced in Less Than 18 Days

Co-ordinated facilities of steel company made progress unusually rapid—Severe weather handicapped erection

**T**WENTY-TWO days after the complete destruction of two long single-track girder spans at the west end of the Reading's bridge over the Susquehanna river near Sunbury, Pa., on January 30, new similar spans, fabricated complete within the period, were in place and in regular service. As a matter of fact, the complete fabrication of the span members and the erection of the spans were completed in approximately 17 $\frac{2}{3}$  days.

This record of performance is particularly significant in view of the fact that the spans are on a sharp curve and at severe skews with the longitudinal center lines of their end supports, involving specially detailed members throughout, and the further fact that the erection work was done under most unfavorable weather conditions, with temperatures almost constantly below zero. Both the fabrication of the steel members and the erection of the spans were carried out by the Bethlehem Steel Company, which co-ordinated the facilities of four of its plants to the end that the work might be completed in a minimum of time.

The bridge involved is on the main line of the Reading between Reading, Pa., and Williamsport, and crosses the Susquehanna river at Sunbury. It is a through plate girder structure of 28 spans, approximately one-half mile long, which was rebuilt in 1915. The spans destroyed were Nos. 27 and 28, at the extreme west

end of the bridge, across the river from Sunbury, span No. 27 extending over the abandoned bed of an old canal at a skew of approximately 36 deg., and span No. 28 crossing an important highway at a skew of approximately 29 deg. The track on these spans is on an 8-deg. curve, and had 4 $\frac{1}{2}$  in. of super-elevation.

### Contract Let Promptly

The destruction of the two west-end spans of the bridge was caused by a train accident, which occurred at 11:45 p. m., Thursday, January 30. The following morning, representatives of the engineering department

This article describes how, by co-ordinating the facilities of four of its plants, the Bethlehem Steel Company completely fabricated and erected two long single-track through girder skewed bridge spans within approximately 17 $\frac{2}{3}$  days after receiving the contract. The new spans, located at the west end of the Reading's long bridge over the Susquehanna river near Sunbury, Pa., replaced similar spans destroyed in an accident on January 30.





February 21—Less Than 18 Days Following the Letting of the Contract, and 22 Days Following the Accident, the Two New Spans Were Put in Service

of the road were at the site and, having appraised the extent of the damage, relayed the facts to the general offices at Philadelphia by telephone. Blue prints were immediately prepared of the plans of the two spans destroyed, the tracings of all of the shop plans having been kept on file for just such an emergency.

Bids were asked on the complete rebuilding of the spans on Saturday afternoon, February 1, and on Monday afternoon, February 3, a contract, embodying a 31-day time limit, beginning February 4, was awarded to the Bethlehem Steel Company. The contract covered the fabrication and erection of approximately 206 tons of steel, including four main girders from 74 ft. 11 3/8 in. to 90 ft. 9 3/8 in. in length and 9 ft. 1/2 in. deep, 10 floor beams, 2 lines of stringers, complete new girder and stringer lateral bracing, and 8 new bridge shoes—4 fixed and 4 mounted on roller nests. The significant fact about the material required was not the quantity, but the lack of duplication in the members. Owing to the sharp and different skews of the two spans, only a few of the members were alike in all respects.

While the railroad cleared the destroyed steelwork from the site of the accident and called upon its timber treating plant at Port Reading, N. J., for a com-

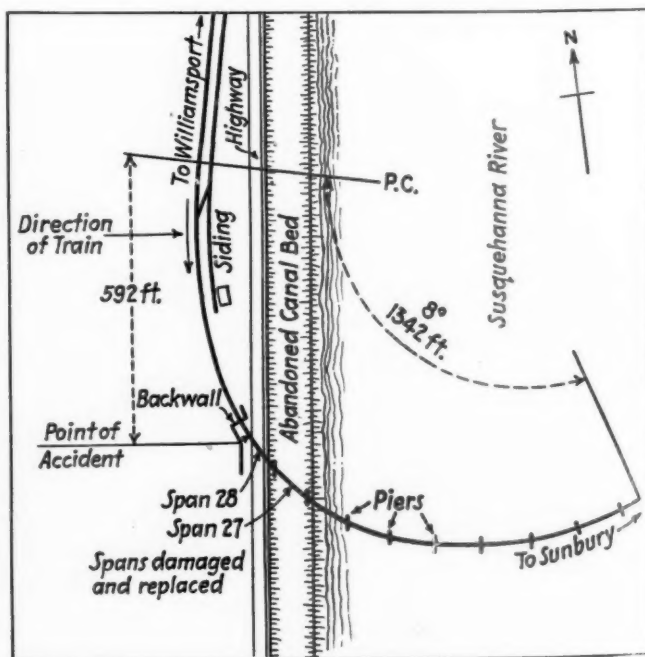
plete new set of treated oak bridge ties, suitably dapped and equipped with elevation blocks, the steel company co-ordinated the activities of its various plants normally engaged in the rolling, casting and fabrication of structural material, in order to turn out the required pieces as promptly as possible. Four Bethlehem plants were called upon and immediately set to work. By February 11, every item specified for the job was in the process of production, and, as a matter of fact, some of the items had already been completed.

The Maryland plant of the company at Sparrows Point, Md., furnished the plates for the girders, which had to be rolled especially for the job, the total order involving approximately 80 tons of sheared and universal plates in widths up to 108 in. Other structural material was rolled at the Bethlehem, Pa., plant, which also, starting without patterns, cast, annealed and machined the masonry and girder shoe steel castings, in an unusually short period of time. The steel rocker pins for the girder shoes were forged and annealed at the Steelton plant of the company within approximately 23 hours from the receipt of the order, and were shipped by truck to the Pottstown works for machining.

As completed, all of the structural shapes were shipped



January 31—The Morning After the Accident Which Completely Demolished the Two Most Westerly Spans of the Bridge



Diagrammatic Sketch of the Track and Bridge Layout at the Point Where the Spans Were Destroyed and Replaced

to the Pottstown plant where they were fabricated into the main girders and deck-framing members, and were marked ready for erection. On February 14, the first finished materials were shipped, reaching the erection site, approximately 140 miles away, about 4:30 a.m. the following day. The balance of the materials was moved out during the next few days, and actual erection began on the morning of February 17.

Employing as a material track an old coal spur leading from the main track directly ahead of the bridge, a derrick car and a small force of men, by 3:45 p.m. on February 18, had erected both girders of the more westerly span, together with two panels of deck and 30 ft. of track. The following day, working forward on the deck as completed, the entire deck of this span was in place and laid with track. On February 20, the girders and two deck panels of the span over the old canal bed were put in place, and by 4 p.m. on February 21 both spans were fully laid with track and were ready for traffic. The first train moved over the spans in regular service at 4:35 p.m., less than 18 full days after

the awarding of the contract, and 13 days within the specified time limit.

In the erection work, which was carried out only during daylight hours, all connections were made by 50 per cent bolting, filling the remaining holes with drift pins. Full riveting was effected during the following week under traffic, being completed on February 27.

The erection work was carried out under extremely unfavorable weather conditions, the temperature remaining below zero for several days and reaching a low of 16 deg. below, accompanied by snow and sleet. Torches had to be used to clear the abutment and pier seats of ice in order to set the bearing shoes, and similarly, snow and ice had to be melted from many of the steel members in order to permit the making of tight connections.

All of the work of rebuilding the spans was carried out under the general direction of Clark Dillenbeck, chief engineer of the Reading, assisted by P. S. Baker, bridge engineer.

# The Brake Problem of High-Speed Diesel Trains\*

Provisions for stopping a vital factor in operation —  
Comparison with automotive practice

By J. C. McCune,

Assistant Director of Engineering, Westinghouse Air Brake Company

THE traveling public has placed its stamp of approval upon high-speed Diesel trains. Moreover, it has displayed great interest in the general features of these trains and particularly the maximum speeds they can attain. Whenever a new speed record is established, the newspapers throughout the country give wide publicity to the achievement. Not so much is said about the ability to stop, but, as engineers, you all recognize that the operation of these trains safely at high speeds is contingent upon stopping them in reasonable distances.

That the brake problem of road vehicles has become ever more pressing on account of increasing weights and speeds has been generally appreciated throughout the automotive industry in recent years. Automotive engineers are aware that the brake problem has some baffling aspects, but few recognize how this problem is magnified when high-speed rail vehicles are involved.

One hundred miles per hour is not an impossible speed for a road vehicle, but such a speed is infrequently reached on the open highway and ordinarily a stop in the shortest possible distance from this speed is not contemplated. The new high speed Diesel trains, on the other hand, operating over private right of way, unlike conventional steam trains, do customarily attain high speeds. Speeds in excess of 90 m.p.h. and sustained for long distances are common, and a record speed of 122 m.p.h. has been recently reported. Not only are high speeds

of daily occurrence, but railroad operating conditions are such that an emergency stop from these speeds is an ever present possibility.

In stopping rail, as compared to road vehicles, three outstanding differences characteristic of the vehicle itself are encountered. These differences are in (1) the axle loading, (2) the speed, and (3) the number of units. Taking comparable vehicles, the maximum axle load with a motor coach is about 15,000 lb., with a Diesel train about 50,000 lb. Comparative speeds may be taken as 65 m.p.h. for the motor coach and 100 m.p.h. for the Diesel train. The motor coach is a single unit, whereas the Diesel train is made up of a number of units. Since the energy to be dissipated in a stop varies directly with the weight and with the square of the speed, the energy given up per axle in a Diesel train is much greater than the energy lost by the motor coach axle. Under the conditions cited, the Diesel axle gives up almost eight times as much energy as the motor-coach axle. When it is recalled that dissipation of heat on the motor coach axle is a very serious problem, it can be appreciated that different means are required to dissipate eight times the energy from the Diesel axle.

In principle, however, the action of the brake is the same on road or rail vehicles; that is, a force is set up which resists rotation of the wheels. This retarding force, therefore, may be taken as the starting point in a discussion of the brake problem.

The possible magnitude of this retarding force is quite different when rail surfaces are compared to road

\* Abstract of a paper presented before the Pittsburgh Section of the Society of Automotive Engineers, February 18, 1936.



surfaces. It is obvious that if the retarding force is increased beyond some value, the wheels will cease to rotate and will slip or slide. For average conditions, it has been found that the retarding force which causes sliding bears a constant ratio to the weight on the axle. This ratio is known as the coefficient of adhesion. (Parenthetically, it should be observed that "adhesion" is frequently referred to as "traction"). For rail surfaces the average coefficient of adhesion may be taken as .25 and for road surfaces as .60. This wide disparity immediately emphasizes the much longer stopping distances of vehicles on rails as compared to vehicles on roads.

If the retarding force on rails must not exceed 25 per cent of the axle weight and on the road 60 per cent of the axle weight, it can be readily calculated that the retardation on rails can not exceed 5.5 m.p.h. per sec. and on the road 13.2 m.p.h. per sec. It is, therefore, apparent that the rail vehicle, because it operates on rails, can not be stopped in distances comparable to the stops of road vehicles. This inherent limitation should be clearly comprehended because many fail to grasp the physical circumstances which prevent stopping rail vehicles at the same rate of retardation as road vehicles.

Unfortunately for brake designers, the co-efficient of adhesion does not always exhibit the same value either on rail or road surfaces. In either case, the co-efficient does not appear to be so much influenced by the nature of the materials in contact, so long as they are typical materials, as by the conditions of these surfaces, that is, beginning of frost or rain, presence of oil, grease, etc. Since these conditions can change rapidly and often without any visual indication, it is impossible to know before the stop what maximum value of coefficient may exist during the stop. On this account designers employ an average value, established empirically, for the co-efficient.

Probably the co-efficient does not vary on private rail right-of-way to the same degree as on public highways. For rail operations the coefficient may lie between .15 and .40; for highway operations between .10 and 1.00. It is evident, however, that with rail vehicles it is highly desirable to use the maximum co-efficient possible, because, even at best, the braking is handicapped by low adhesion or traction. Fortunately, with rail vehicles, means can be provided which compensate to a considerable degree for unfavorable conditions; that is, the rails can be sanded. With proper sanding approximately the same coefficient is realized on a poor rail as on a good rail without sand.

No mention has been made of the possible effect of speed upon the co-efficient of adhesion. Before any of the high-speed trains were available for test one school of thought held that the co-efficient of adhesion was much diminished at high speed because the wheels could not follow all the vertical inequalities of the track and might even momentarily lose contact with the rails. Tests with the Burlington Zephyr in October, 1934, led to the conclusion that no major reduction in adhesion occurs at high speed. Tests since made by the German State Railway, unfortunately limited to a maximum speed of about 62 m.p.h., but measuring adhesion more directly, support the findings of the Zephyr tests. Pending further evidence, it may be stated that the adhesion between wheel and rail does not change markedly even at the highest speed. This conclusion is of great practical consequence because it means that the same rate of retardation can probably be set up at 100 m.p.h. as at some lower speed and that, therefore, these high-speed trains can be stopped in reasonable distances with the customary air brake, but because rail adhesion is so low,

other means of braking have been considered to which brief reference will be made.

### Track Brakes

One other form of braking which has had some consideration is the magnetic track brake, heretofore confined in this country to low speed, light weight vehicles, chiefly street cars. The magnetic track brake consists of a magnet in the form of a long shoe, normally suspended above the rail, but which, when energized, is caused to engage the rail and which, because of magnetic attraction, adheres to the rail. Since the vehicle pulls the shoe along the rail, a retarding force is developed which is independent of wheel adhesion. Consequently, a shorter stop can be produced than by an air brake alone. But to develop a considerable retarding force the track shoe must be several feet long since the magnetic attraction per unit length is limited by the rail section. Consequently, the track shoe becomes heavy, is difficult to install and introduces some hazard in high-speed operation. Furthermore, the retarding force of the track shoe is least at high speeds and greatest at low speeds, which is directly opposed to what is desired. The control of the retarding force, therefore, becomes difficult and particularly when train operation is involved. For all of these reasons, and especially the question as to whether the result warrants the cost, it appears likely that the present practice will continue, that is, apply air brakes only until it is apparent that the potentiality of the air brake is exhausted and that additional retardation is necessary.

Since motors are employed with high-speed Diesel trains, some thought has been given to various forms of electrical braking. But, obviously, since such forms of brakes operate through the wheels, the limitations imposed by adhesion are not removed. Furthermore, it is not generally appreciated how vastly different is the power aspect of acceleration and deceleration. Any kind of vehicle is expected to stop in a much shorter distance than is required to accelerate. But either acceleration or deceleration is proportional to torque, and horsepower is proportional to torque and speed. Consequently, if the rate of retardation at 100 m.p.h. equals the rate of acceleration at 5 m.p.h., the power to be dissipated during retardation is 20 times the power input during acceleration. Quantities of heat are present during a stop, therefore, much greater than any encountered during the acceleration. If the motor equipment is to be employed for retardation its thermal capacity must be greatly increased over that otherwise necessary. For high-speed braking, this practically amounts to a prohibitive handicap.

### Braking Surfaces

The retarding force is caused by setting up a force which resists rotation of the wheels. The manner of applying this force differs in road and in rail vehicles. With road vehicles it is clearly impossible to apply such a force directly to rubber tires and, consequently, the force is applied to drums which are integrally mounted upon the axle. With rail vehicles, on the other hand, the force is directly applied to the tread of the wheel.

The first method of force application is frequently referred to as "drum braking." Some who have not had an opportunity to analyze the situation thoroughly appear to think that "drum braking" possesses a certain inherent merit. Examination of the actual circumstances does not substantiate this thought. The actual stop, as mentioned, is brought about by the retarding force established at the rail. This retarding force is set up by a torque which resists rotation of the wheels. So long



as this torque has the same value the retarding force is the same, irrespective of the means by which the torque is produced. Consequently, the length of stop is affected only by the magnitude of the torque and not by the manner in which it is established.

Practically, the two methods of force application are well adapted to the needs of the two services. With road vehicles drums on the axle are a necessity. With rail vehicles the tread of the wheels can be used for the braking surface and this has always been the practice. When braking is done on the wheel tread the same torque can be set up with a smaller frictional force than with drum braking, because the diameter of the wheel is greater than the diameter of the drum. This is advantageous where heavy vehicles require the employment of high retarding forces. Furthermore, the energy to be dissipated on rail vehicles is so great that the braking material wears relatively rapidly. Hence, a considerable amount of wearing material must be provided to afford reasonable shoe life. Consequently, there must be ample "follow up." In addition, there must be sufficient shoe clearance at all times because "dragging brakes" materially increase the power requirements of the train. For these two reasons the cam construction, generally associated with drum braking, is not suitable for rail vehicles.

The force set up on the braking surfaces is produced by the use of frictional materials. Here a great difference exists between road and rail vehicles. The energy to be dissipated with road vehicles is sufficiently low that organic compounds can be utilized as frictional materials, but with rail vehicles so much heat has to be given up that an inorganic material, namely reinforced chilled cast iron, must be employed.

With brake linings it might be said that the temperature of the lining during a stop should not exceed, say, 500 deg. F. After the stop of a Diesel train from a speed of 104 m.p.h., a temperature of 802 deg. F. was measured on the surface of a brake shoe. Obviously, such a temperature on the external surface of a brake shoe measured after the completion of the stop, is indicative of actual rubbing surface temperatures during the stop much beyond the capacity of conventional brake linings. Evidently, the temperature could be reduced by providing greater braking surfaces, such as a combination of tread and drum braking. But to permit the employment of composition linings such a large drum would be demanded that no space for its installation is available. Consequently, it appears necessary to employ metal as the brake frictional material.

The frictional characteristics of reinforced chilled cast iron are not those most desired from a retardation viewpoint, but more than a hundred years of development have failed to disclose a material better adapted to the tremendous heat and pressure involved in braking railway vehicles. Composition linings possess the great advantage that the co-efficient of friction does not change with speed. Furthermore, the co-efficient of friction is high. A high, uniform co-efficient of friction is most advantageous in bringing about short stops with a minimum of apparatus. Cast-iron shoes, unfortunately, have a co-efficient of friction which is neither high nor uniform. The co-efficient decreases as the speed increases and is highest just as the vehicle stops. Since the co-efficient with cast iron is so variable, it is difficult to compare it with the constant co-efficient of composition linings. But in a stop from high speed, the co-efficient of friction with cast iron, averaged throughout the stop, might be, say, .10, whereas with composition lining, it would be, say, .35 throughout the stop.

The low value of the cast-iron co-efficient introduces

another difficulty as compared with composition linings. That is, to produce the same friction a much higher pressure is needed, for illustration, in the ratio of .10 to .35. Rail vehicles are heavier than road vehicles which in itself would require greater brake pressures. But when these brake pressures must be further increased on account of the low value of the co-efficient of friction, very high pressures are reached which obviously means heavy construction in the braking system.

Another factor that must be considered with cast-iron shoes is that the co-efficient of friction changes with the shoe pressure. As the shoe pressure increases, the co-efficient of friction decreases. If the shoe pressure is doubled, twice the friction does not result on account of the decrease in the co-efficient of friction. Consequently, as the vehicle becomes heavier the shoe pressure must be increased on account of the added weight and again on account of the decreased co-efficient of friction.

Much has been said with reference to heavy brake-shoe pressures. Obviously, the shoe pressure can not be increased without limit. Present practice limits the shoe pressure to a calculated value of 18,000 lb. Considering that a new brake shoe weighs about 26 lb., a pressure of nine tons on a mass of metal weighing only 26 lb. can fairly be claimed to represent a heavy pressure.

As further indication of what the brake shoes are called upon to do, consider an axle carrying a weight of 50,000 lb., equipped with four brake shoes and being retarded at the rate of 1 m.p.h. per sec. At 100 m.p.h. the horsepower to be dissipated per axle is 607, per shoe 152, or per pound of metal in a new shoe 5.8. A radial airplane engine developing about one horsepower per pound of weight is considered an outstanding engine. All are familiar with the skill which must be exercised in providing that such an engine will be properly cooled. But the brake shoe in the case considered dissipates 5.8 hp. per pound of metal. It is apparent that frictional materials for such service must be affected by heat to the minimum degree.

### Brake Rigging

With rail vehicles that part of the brake system which has to do with directly applying pressure to the brake shoes is called the brake rigging. Compared with automotive practice it is heavy and cumbersome but this situation comes about for two reasons.

Compared with automotive practice, the forces to be transmitted by the brake rigging are tremendous. On the basis of four shoes per axle and each shoe loaded to the limit of 18,000 lb., the axle would have a braking load of 72,000 lb. Actually this axle loading has been slightly exceeded with some Diesel trains now in operation. It is evident that the rods and levers of the brake rigging must be of substantial construction to transmit such forces safely.

But it is necessary that the members of the brake rigging be designed on a basis of deflection rather than strength for the air-brake system includes reservoirs of fixed size which supply the compressed air or the brake cylinders. Hence, the brake cylinders should be of fixed size in order that the intended cylinder pressures may be realized. But if the members of the brake rigging stretch unduly as their loading is increased, the travel of the brake cylinder piston will likewise increase. Consequently, the matter of deflection is an important element in design. Because the brake rigging of rail vehicles must provide for the transmission of high forces with minimum deflection, it necessarily becomes heavier and more cumbersome than in automotive practice.

Air brakes for train service may be applied in either of two ways, that is, by a service application or by an

emergency application. With trains, except articulated trains, a certain lost motion or "slack" exists between the various cars. Sufficient time must be taken in applying the brakes on individual cars to permit the slack to close in such a manner that shocks will neither be uncomfortable to passengers nor damaging to equipment. The same problem exists though to a lesser degree, even when electric control of the brake application is employed. In a service application of the brakes, therefore, a time element in attaining full application is introduced in order that adequate control of the slack may be obtained.

In addition, the maximum retarding force is not developed by a service application. Since variations in adhesion have already been discussed, it is apparent that if a high value of retarding force is employed in service, danger of wheel sliding exists. Moreover, wheel sliding may be readily brought about in rail operation for two other reasons. First, since the brake-shoe friction increases with decreasing speed, an application which did not slide the wheels at higher speeds may at lower speeds, if not reduced by the engineman; second, where many axles are involved, it is difficult to detect sliding of a single axle. For these reasons the magnitude of the retarding force is limited in service applications to a value which long experience has shown to be satisfactory.

The reasons which have brought about two types of brake application do not all apply to articulated trains, to date the predominant high-speed Diesel type. With such trains, it is possible to employ a higher retarding force in service than has heretofore been the case. But as a practical matter higher emergency force is also advisable. Diesel trains are operated over the same tracks as conventional trains and by enginemen long familiar with the service and emergency applications described. Because of customary practice alone, it appears that a very considerable difference should exist between service and emergency stopping distances. Furthermore, such a reserve permits an engineman to compensate if necessary, for errors in judgment, for developments which may arise during the stop itself, and for the innumerable exigencies which appear suddenly in railroad operation.

#### Characteristics of Articulated-Train Brakes

The brake equipment of the articulated high-speed Diesel train, unlike that of the modern steam train, is provided with electrical control of the application and release, so that the brake can be simultaneously applied or released on all cars independent of train length. Provision is made for an automatic pneumatic application in the event of failure of the electric wires. It should be noted that electric control does not have anything to do with the magnitude of the retarding force created but does permit more flexible control of this force. With electric control 75 lb. cylinder pressure is attained throughout the train about 2 sec. after the brake application is initiated.

In order that the brake may be readily applied or released to the degree desired, the engineman's valve is of the self-lapping type. Each position of the valve corresponds to a certain cylinder pressure, the brake application being increased or decreased as the engineman advances or retrieves the brake valve handle. It is obvious that such a valve permits ready and positive control to any degree desired of a brake which requires little time to be applied fully.

In emergency 100 lb. pressure is developed in the brake cylinder. This produces a retarding force greater than in service and consequently the emergency stop is shorter than the service stop. The equipment is also provided with what is known as "dead man's control."

If the engineman becomes incapacitated or willfully abandons his post, an emergency application is automatically brought about. Moreover, the equipment is so arranged that in the event the train becomes crippled, the brakes can be operated by conventional steam road equipment.

The equipment on these trains also includes provision for automatically limiting the maximum retarding force and in a manner not heretofore employed. It has been explained that the friction of brake shoes is less at high speeds than at low speeds. The new articulated trains are designed and intended to operate regularly at high speeds, on which account, if the stopping distance is to compare favorably with that of conventional trains operating at lower speeds the rate of retardation at high speeds must be made greater than it has heretofore been. But if heavy shoe pressures are employed at high speeds and are retained at lower speeds, danger of wheel sliding exists. Accordingly, an automatic means for reducing the shoe pressure as the speed decreases is indicated.

This automatic means is an inertia device called the "Decelakron." It consists of a weight, supported by frictionless bearings and constrained against movement by a spring. When a stop is made the weight, on account of its inertia, tends to move relative to the car body but this movement is prevented by the spring. When the rate of retardation exceeds a predetermined value, however, the spring can no longer resist the inertia of the weight and consequently the weight moves and compresses the spring. This movement is taken as a pilot action which can be utilized to release the brakes and correspondingly lower the shoe pressure.

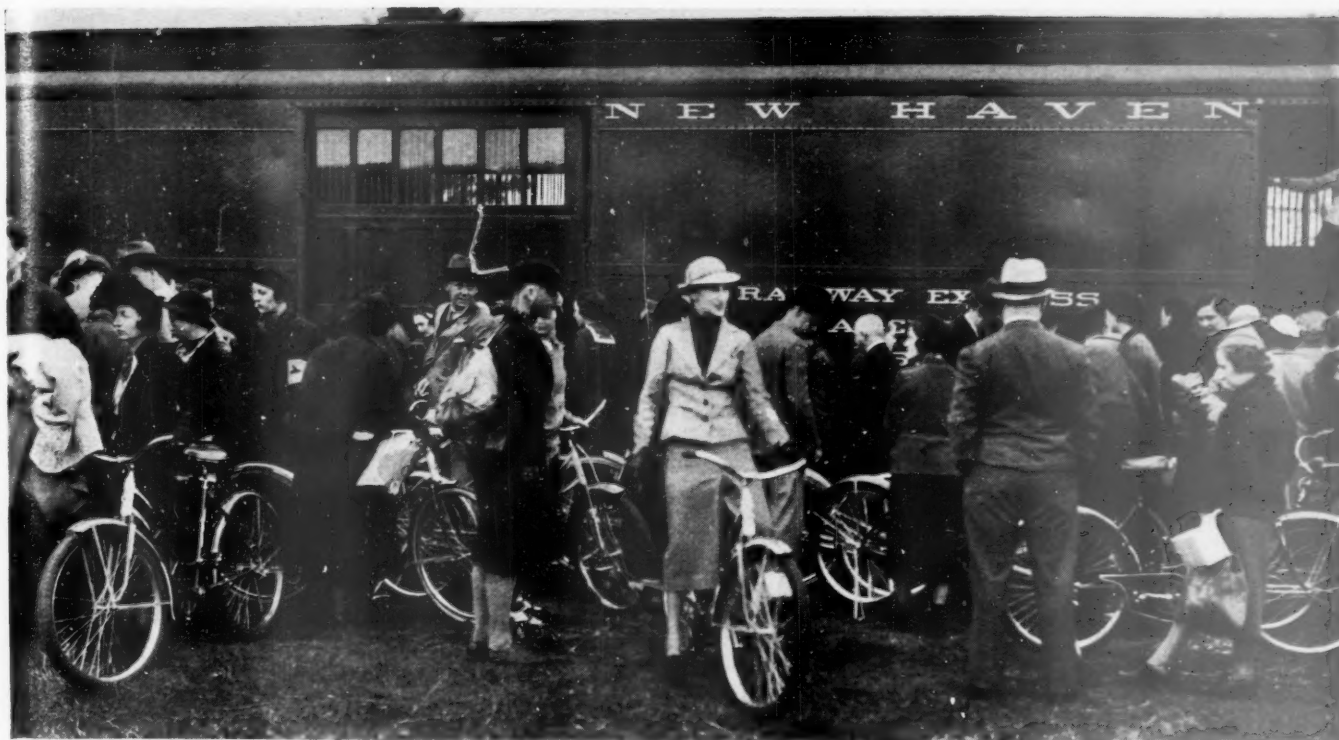
This device attains its maximum usefulness in articulated trains where no question of slack action exists and where, because of the absence of a locomotive, all units are of uniform character. A more general approach to the problem is to directly proportion the available shoe pressure to speed.

#### The Problem with High-Speed Locomotives

Although articulated trains are the predominant Diesel type to date, high-speed Diesel locomotives must also be considered. The brake problem of trains consisting of Diesel locomotives and conventional cars has ramifications which can not be discussed in the time available. But two factors of outstanding importance can be mentioned. One is that the locomotive is a very substantial portion of the total train weight and, therefore, in order to produce a short stop, the brake on the locomotive should be equally as effective as the brake on the car. Although this is the objective to be sought, it is practically difficult of attainment. The other is that the problem of slack control, when a locomotive is employed, becomes of great moment and its satisfactory solution rests largely upon judgment and experience.

That a revolution in passenger train operation on American railroads, brought about by the successful introduction of high-speed Diesel trains, is in progress is scarcely an over statement in view of the present activity on the railroad front. Whatever the ultimate form of the train may be there appears little reason to doubt that in the future trains will more frequently attain high speeds and sustain these speeds for greater distances than has been the practice in the past. Whether this high-speed operation ever becomes standard practice depends, perhaps, more upon the air brake than any other single factor. All the history of the past supports the view that train stopping distances must not radically increase, not only because of passenger safety but also because of expeditious handling of traffic.





Cycle and Clothing Trades Hope the Venture May Prove Popular

## "Bike to Nature" at \$2 a Head

Department stores, cycle trades seek bicycle revival through train travel  
to rural areas, avoiding congested highways

THE New York, New Haven & Hartford operated the first "cycle train" from New York on Sunday, April 26, opening up what, it is hoped, may be a new stimulant to rail travel. The idea is an adaptation of "hike and bike" trains operated last fall by the Boston & Maine out of Boston. The New Haven's "cycle train" was not run as an extra; it was made up of 7 cars—4 coaches, 2 baggage cars and a dining car—attached to the rear of a regular train. The "cycle train" left New York at 7:55 a.m., Daylight saving time, and was set out on a siding at Canaan, Conn., 116 miles distant, at 11:16 a.m. Returning, the "cycle train" was picked up by a regular train at 6:32 p.m. and arrived at Grand Central Terminal at 9:47 p.m. The trains on which these extra cars were operated run express between New York and South Norwalk, 41 miles, and local on the Pittsfield line north of the latter point. Electric locomotives are used between New York and Danbury, 65 miles, and steam beyond that point. The extra cars were handled by the regular train without difficulty.

### Getting Enough Bicycles a Problem

A total of 222 passengers was carried on the "cycle train" outing. The fare was \$2 for the round-trip. Many more passengers would have taken the trip only for the fact that sufficient bicycles were not available. Passengers' own bicycles were carried free and a concessionaire supplied the remainder, which he rented at \$1.50 for the day. Passengers were urged to purchase tickets for the excursion and reserve their bicycles in

advance and those who did so were accommodated. Representatives of the concessionaire moved through the train during the outbound trip and collected the fees for the use of the bicycles so that, on arrival at Canaan, cyclists were able to start their exercise as rapidly as the machines were unloaded. The siding where the train was left was in a rural neighborhood, and adjacent to the highway on which the cycle course was laid out.

The venture was characterized by great thoroughness and foresight on the part of the railroad officers in charge of arrangements. A road was picked out for the



Passenger Department Officers Patrolled the Cycle Route by Automobile





Eager to Start Wheeling

cyclists which, while paved, was comparatively free of traffic. State police were consulted before final arrangements for the trip were made and at each entrance to this road a large sign was posted to warn motorists to be on the lookout for cyclists. Direction signs were posted along the route at each turning and an automobile with railroad passenger department officers moved along the course at frequent intervals to be available in event of any mishap to the cyclists or their machines. The last trip of this car was a "round-up" to make sure that all laggards would be back in ample time to catch the returning train.

#### Good Business for the Dining Car

The dining car did an excellent business. A special menu was provided offering combination breakfasts at 35 cents and 60 cents, and a table d'hôte dinner at \$1. A box lunch at 50 cents was offered in lieu of luncheon. The dining car served 162 breakfasts and 139 dinners and sold 43 box lunches. No effort was made unduly to push the lunch business, in order to en-



Several Tandems Were Seen

courage the passengers to patronize roadside refreshment stands and thus cultivate the good will of local people to the enterprise. A considerable bar patronage was also accommodated in the dining car. The catering service was provided under the personal supervision of H. W. Quinlan, superintendent of dining cars of the railroad.

Passengers on the outward journey were given printed matter explaining the nature of the excursion, with a detailed map of the cycle route. The latter covered some 12.5 miles, one way, of rolling profile in a beautiful hilly rural section, without many steep grades. In its literature, the railroad explained that the route laid out was not made too ambitious as a beginning, and that more strenuous courses would come when "we are better able to gage the physical powers of our patrons." That the selection of a moderate course was wise was indicated by the fact that confirmed cyclists made up only a small fraction of the total passengers. By far the greater part were tender amateurs, who will have to spend a lot of money on similar excursions before they are hardened up sufficiently for strenuous scorching. As it was, the passengers for whom push-biking is no mere divertissement satisfied their greater ambition by covering the course twice, round-trip, or a total of approximately 50 miles.

#### Passengers Enjoyed the Train Trip

The patrons of this excursion were pleasant and politely-behaved people, relatively young for the most part, and included a number of persons of some prominence who can command a following, and whose patronage of the service augurs well for its success. Having a common interest and a common destination, the customers quickly became acquainted with each other, establishing cameraderie such as that which one encounters on ship board, but seldom on trains. The effectiveness of this community interest cannot be questioned as a promoter of steamship travel, and a train of this kind is a means by which the railroad can achieve the same desirable goal. Indeed, it appeared that the train journey to most of the cyclists was fully as pleasant as the outing itself. The publicity staff of the cycle trades lent their support to the enterprise, as did that of a large department store. Other stores also were represented on the trip and gave some co-operation in making it a success.

Intensive publicity facilities were arranged under the direction of S. A. Boyer, publicity manager of the railroad. The important press associations and newspapers were represented by reporters and camera men, and news reel camera men also filmed the outing. Practically all the New York papers gave up to a column of news space, with pictures, to the affair on the day following. (The co-operation of stores in an enterprise of this kind is of great help in "putting it over," because of their heavy use of daily newspaper advertising space, some of which they can readily shift over to exploiting such an excursion. Moreover, they have an important financial interest in the experiment because they have bicycles to sell and, more important than that, they also sell women's clothing appropriate to the occasion. By the time a department store gets its business done with a lady cyclist, the \$2 railroad fare appears pretty small change by comparison).

#### Other Cycle Trains to Be Run

In direct charge of the arrangement for the train were G. K. Murphy, assistant to passenger traffic  
(Continued on page 733)

# Some Remarks About Railway Supply Departments\*

Separate organizations to buy and control material extolled—Price-fixing scored—Efficiency yardsticks discussed

By G. E. Scott,

Purchasing Agent, Missouri-Kansas-Texas, St. Louis, Mo.

VOLUMES have been and will no doubt continue to be written about the railway purchasing and stores department without exhausting the subject. I have described it as a department, but within the organization we do not consider it a separate department in the sense that word implies, because it serves every other department on the railroad in one way or another. The word "service" therefore is a watchword and the organization is quite properly called the "service of supply." Failure to give service endangers its right of existence.

It was for the purpose of furthering the interests of this service that several stores officers banded together more than 30 years ago in a common cause that has had far-reaching effect and was the forerunner of the present day purchases and stores organizations. They builded better than they knew. There was a woeful lack of system, and very little uniformity between divisions of one property—much less between different properties, insofar as purchases and stores were concerned. The Railway Storekeepers' Association was the outgrowth of this initial effort, and was merged in 1919 with the American Railway Association and known as Division VI of that organization, and now as the Purchases and Stores Division of the Association of American Railroads.

During the transition period the railroads were sufficiently impressed with the development and progress manifested by the collaboration of effort to concede that there should be a complete separation of the service of supply from the using departments, with the duties of each definitely defined; and that there should be an organization sufficient and capable of determining the needs, providing, distributing and controlling all materials and supplies until used or salvaged, purchase all articles required, including equipment, and negotiate the sale of all materials. In many cases this was amplified to provide that the organization should do all primary accounting, subject to the direction and control of the accounting department.

Without doubt this policy has contributed generally to the efficiency with which the railroads are managed at this time. The personnel has improved, the methods used are broader and more scientific, and the service and economy to the railroads has been incalculable in value. Management made one of its distinctly forward steps when it placed the service of supply on a parity with the other departments on the executive staff and likewise acquitted its judgment that the policy of integrating the functions of purchasing and storekeeping was sound and worthy.

Many railroad men not directly connected with the purchases and stores organization have no real con-

ception of the diversified efforts involved in the procurement of materials and their subsequent handling, distribution and use. It is a specialized organization which, in many respects, is dissimilar to any other on the railroad, and for that reason some executives are not familiar with the detail of its functions. The purchases and stores organization is one of the principal commercial contacts with industry, and its diversification of activity is limited only to the large number of materials it purchases and handles. The Bureau of Railway Economics is authority for the fact that over 20 per cent of the railroad dollar is spent for materials and supplies. Only labor exceeds it. Materials are almost always reducible to a cost basis in making comparisons of values, ultimate net cost being the essence of efficiency; and to determine this, constant research is occurring in purchasing and stores offices. To know the value of one material as compared to another is no idle task, but the organization is constantly on the alert to these conclusions and to take advantage of the development of the arts and employ new devices and materials, where economy can be definitely established. To a great degree, we are indebted to the supply fraternity. I believe it has been shown that railroad men are generally too busy railroading to develop new devices or new materials.

The stocks of materials and supplies so necessary to the operation of a large railroad are scattered all over its property. They are not obtained by magic or legerdemain. Very definite modes of procedure have been mapped out by which they are supplied with the utmost economy and minimum of investment. The number of items carried in stock varies from about 15,000 to 60,000, and perhaps more on the larger lines, depending somewhat on the density of traffic, character of maintenance, quantitative block signaling, electrical service and the many contrivances used for other purposes.

Since the needs are not uniform on any line for any period of time, more or less allowance for the extent of operations has to be made in determining the requisite stocks to be carried. To have materials on hand at the proper time and in the amount required, but not in excess, is the aim of all such organizations. However, whatever stock is normally maintained is presumed to have been determined by the judgment of a prudent management.

## Stress Stock Books

The use of a master stock book and material classification forms the backbone of the operations on most lines whereby proper ordering and control of investment are accomplished. Requisitions for the purchase of commonly used or stock items are normally initiated by division or district storekeepers, and special materials for program work are requisitioned by the users, the

\* From an address before the Western Railway Club, April 20.



head of the department being finally responsible for the amount and character of material so ordered and for its subsequent prompt usage. The master stock book is maintained in the general store office on most roads as a catalogue of all items carried in stock. The division or district stores are provided with stock books similarly prepared but only covering the material carried in stock at their store. Requisitions prepared by them are cleared through the master stock book in the general store office in order to preclude ordering materials which may be on hand elsewhere and subject to transfer. The use of this system and of economical methods and devices in the handling of materials has had much to do toward obtaining satisfactory operating results.

The simplicity of records and operations in general avoid many avenues of error. Improper designations were once bugbears for all purchasing offices, but, happily, these have now almost ceased to exist. As the years go by, those forces directly concerned with the use of material are less inclined to complain. This is the result of better co-ordination and understanding of each other's problems.

The use of material-handling devices and equipment has resulted in cost reductions. However, in many cases, railroads have not been able to secure the maximum benefits because of the lack of funds to make expenditures. As business increases, we are bound to take stock of the potent possibilities in this direction and convince our managements that cash outlays for newer and better devices for handling are justified.

#### Fuel Expenditures Greatest

Fuel is the largest single item of materials and supplies used and is usually supervised by a fuel agent. The aggregate cost of all fuel in 1935 was about \$200,000,000. Great economies have been made on the railroads in the last ten years in the economical use of fuel. This important commodity takes more than 5 cents of each dollar earned. The railroads consume 25 per cent of the bituminous coal output of the United States and so adjust their operations as to utilize the character and grades of coal produced on or nearest to their lines of road. The measure of performance is expressed in pounds per 1000 gross-ton miles. The results vary materially, according to the tonnage handled. The average consumption on all railroads is about 125 lb. per 1000 gross-ton miles, oil being equated to coal usually on the basis of four barrels of oil equal to one ton of coal. A combination of conditions is necessary to economical fuel performance, namely; good fuel, well maintained locomotives, efficient despatching, and an organization specializing in fostering the economical use of fuel in its broadest sense.

Of great importance also are the procurement, handling, treatment and use of forest products. Under this category come ties, lumber and piling, in the order of their importance and rank as to aggregate purchase values. An efficiently administered tie and timber organization is essential. The head of it should be discriminating, with a constant eye to the avoidance of waste, practical production and application of all forest products; and, at the same time, versed in the various preservative processes. Because of their characteristics, none of these items can be as closely regulated as to quality and size as steel and other manufactured commodities. The inspection of forest products is perhaps the most important part of their procurement, since it involves the judgment and interpretation of specifications by a corps of men whose knowledge and views may differ widely.

Stationery and printing is another item that requires

special application. This embraces not only paper and pins but every kind of material and device that is used or consumed in the conduct of the office business. Radical changes have come about in this field since the old days of the tissue copy press, and it has been necessary for stationers to keep abreast of the latest developments and employ them to serve the interests of economy. Until the depression had a deterring effect, it was common practice to deliver stationery to all users through the medium of supply cars, included in the monthly or bi-monthly trips of the supply train where other materials were commonly disbursed to the users on the line. Much of its moves now in the old-fashioned way—by the bundle.

These are only prominent sub-divisions of the work in the purchasing and stores organization. Some of the larger lines have several purchasing assistants, all especially schooled in the commodities which they are delegated to purchase. Their duties are multitudinous, but the work is exacting and requires a fine conception of all phases of production capacity and other related factors that will provide the proper materials, deliveries, etc. In this category, of course, the major items purchased are usually separated and handled as necessity may dictate.

#### Millions From Scrap

During 1935, 4,000,000 tons of scrap were sold by the railroads, with an approximate value of \$40,000,000 or more. Much of this tonnage was exported, mostly to Japan and Italy. The marketing of scrap is a job that requires skill in order to obtain the greatest return. Usually it is concentrated at points where it can be handled cheaply, with due regard to proximity of market and the character of scrap it consumes. While heavy melting steel is the "ace" classification in the scrap deck, there are many other valuable trump cards in the assortment, and this is where the ingenuity of the man in charge of the classification comes into play.

#### What is Reclamation

Reclamation should not be overlooked, notwithstanding many misuses of the name and abuses of practice. Special reclamation plants, under the purchasing and stores department, separated from locomotive or car shop operations, are unmistakably valuable and productive of economy, if properly designed, equipped with modern tools and competently operated. The name has been misused and probably confused with repair and manufacture. I have seen materials and devices sent to the reclamation plant that could have been reconditioned more economically at local points. Such practices are now the exception, but they dampen the enthusiasm of practical observers. So-called reclamation should embrace the salvage from scrap of usable materials not needing repair; the repairing of such that can be repaired without changing usage, and converting scrap or obsolete material into something usable at a cost much less than its new value but with the probable service life of its equivalent.

Where roads have conservation and standardization committees, the purchasing and stores department is usually represented. Employees in other departments—the users of materials and supplies—have been educated on most roads regarding the unit value of materials used by them and it has conserved their use. The painting or oiling of castings and other iron and steel items exposed to the weather has had a psychological effect on the men that use them. Working with the Bureau of Standards and with our own associations, as well as with the manufacturers direct, tremendous



strides are being made in the simplifying of store stocks. Notable in this respect is the reduction of sizes of so many of the common items of material carried in stock. The standardization of tinware, galvanized iron and steel ware has recently come within this scope. Not many years ago we had about 20 different sizes of track bolts in stock and felt obliged to carry them regularly. We now have eight sizes. Boiler lagging, bolts and nuts, mazda lamps and other commodities have been packed and marketed by the manufacturers in standard size containers. This is another field where the manufacturers have contributed to railroad economies.

I have not dwelt very much on the effect that the purchases and stores division of the Association of American Railroads has had on the service of supply. While much has been accomplished, there is still a wide field of usefulness for its investigations and recommendations. A check made in February, 1935, indicated observance by the railroads of recommended practices of above 85 per cent. This has been accomplished by the purchasing and stores organizations, since their members comprise that part of the association.

#### Measuring Supply Efficiency

All railroads have some common problems, and, so far as transportation operations are concerned, the yardstick for measuring efficiency is applied alike and the results produce reasonably accurate comparisons. This is regrettably not so true in respect to purchasing and stores operations, especially because of variances in accounting and practices in ordering, receiving and disbursing materials. From time to time comparisons are displayed of purchases or material balances between a group of lines where the relationship to operating expenses, gross earnings, miles of road, etc., is considered. Without making a detailed analysis of the several accounts between any two lines compared, such figures should be used with caution until the ideal is obtained. I am not claiming that there is at present any true basis of analysis; however, there is general accord that turnover, measured by the number of days' or months' stock on hand, is the fairest yardstick for comparisons. Our operations are only fairly judged by how often we are able to turn our investment, the same as any other business.

#### Price Fixing

A topic that might be discussed with candor is the present rather common practice of price agreements. When we are looking over a tabulation of bids and see the prices of three or more bidders exactly the same, we are entitled to suspect that it was not by coincidence. The codes were largely designed with the laudable principles of requiring the payment of a fair wage, regulation of the number of hours worked to reduce unemployment, and the elimination of child labor; also for the purpose of setting out unfair trade practices, but the makers attempted to correct the abuses that had grown up in industry in its lifetime with one stroke of the pen. Some of the effects did not work, mainly because industry did not give much, if any, consideration to the interest of the consumer.

I am a firm believer in a fair price which will not produce a loss. The railroads are doing their utmost to operate efficiently and economically, which the record of their achievements in recent years supports, and they should not be required to pay prices that are fixed upon a foundation of protecting the high-cost producer. The practice places a penalty on efficiency. The question arises as to whether the fixing of unfair prices is not more faulty than the so-called evils of insidious compe-

tition, the responsibility for not all of which should be laid at the door of buyers driving a hard bargain, but to competitors taking business at a price known to produce a loss. I do not believe any of us have ever had a satisfactory conclusion to any deal that contemplated a loss to the producer when the business was placed. In any event, unfair high prices drive a purchaser to substitutes or to utilizing his own shops for production.

#### Increased Buying

I do not believe anyone has yet been able to chart a future for the railroads from the standpoint of a prospective increase in buying power, in view of the many legislation uncertainties overshadowing them. However, if the pre-depression level of purchases were restored they would spend almost \$800,000,000 additionally per annum and afford employment to 500,000 to 700,000 men in the supply industry, as well as to thousands of additional men on the railroads. Let us hope that something will transpire that will overcome inequitable subsidies or provide one for the railroads which will make possible a recurrence of this desirable situation in which you are all so vitally concerned.

## "Rigor Mortis For the Railroads"

UNDER this caption the Association of American Railroads has issued a statement regarding the effect of the passage of the Wheeler-Crosser bill, which it declares is intended to "freeze" railroad employment. The statement discusses the intent and purpose indicated by the provisions of the bill as written. There have been indications that the bill would be modified in committee but the extent of the modifications has not yet been shown.

"The intent of the Wheeler-Crosser bill (S. 4174—H. R. 11609)," the association says, "is to prevent reduction in railroad employment regardless of the future course of business, unless express authority shall be secured in each case from the Interstate Commerce Commission. This authority the commission may not grant until after a slow and elaborate process of notifications, hearings, records and findings of fact, and then only if the railroad or railroads which are seeking to effect economies shall make either large lump sum or continuing payments to the employees who are displaced.

"The effect of such requirements would be to discourage improvement or enlargement of railroad service to the public, to restrict increase of railroad employment even if business should improve, and to impair the ability of railroads to compete with other forms of transportation. They would 'freeze' service and employment when once established, with rigid restrictions upon the adjustment of rail service to the demands of business. These restrictions would apply to railroads alone, and not to truck or bus lines, water lines or other transportation. They would apply to the operations of each single railroad as well as to consolidation or unification of facilities by two or more railroads.

"The railroad business goes up and down with business in general, and with the seasons. When business is heavy, trains are added, stations opened or enlarged, shop forces expanded, additional service and facilities

of all sorts provided to take care of the business. Should the Wheeler-Crosser bill become law, this natural process would be seriously hampered and embarrassed. Railroads would be discouraged from improving their services, offering new trains and the like, because they would know beforehand that such trains or services could not be taken off when the need for them had passed, and there was no longer revenue to support them, unless express authority could be secured from the Interstate Commerce Commission, after the following long drawn out process:

1. The railroad must file a petition setting out in detail the "extent to which public services now being performed will be reduced, or facilities now available will be eliminated."

2. Notice of such petition must be given to the chief executives of all states and municipalities which the Commission thinks may be affected.

3. The Commission shall appoint, in each case, a Special Adjustment Board, composed of a representative of the employees, the carrier and the Commission, to hold hearings, make a record, find the facts and make recommendations to the Commission.

4. The Commission shall allow time and opportunity for filing objections to these recommendations, and then, after express findings of fact upon the record, may disapprove the application of the carrier to reduce service or facilities, or may approve it. It may be approved, however, only upon the conditions that the railroad shall:

(a) Find for each employee who may be displaced by the reduction, other comparable employment on no less favorable terms and conditions; or

(b) Pay to employees for whom such comparable employment is not found, not less than two-thirds of the pay which would have been earned in continuing their previous employment; or, at the option of the employee, pay at least one full year's earnings as a "dismissal compensation," or an adequate pension for life to those eligible for retirement.

(c) Pay the cost of removal and absorb any losses from home ownership or rental if employees are required to relocate.

"Faced by a procedure so formidable, with such results at the end, any railroad would be reluctant to expand its services, knowing that it would have to maintain such expanded service indefinitely, or to continue to pay a large part of the wages of the men involved if it should be discontinued.

"This would be true not only in cases where two or more railroads agreed upon cooperative or joint use of terminals, shops, trackage or other facilities, but also when a single railroad, in the normal fluctuating operations of its business, attempted to adjust its services to the needs of commerce.

"Much employment in transportation has shifted from railways to highways, waterways and airways. No law on the statute books could have prevented this for long, since no law can keep men on the payroll of a business which does not take in the money to pay the wages. To attempt by act of Congress to keep men employed on the railroads, with their competitors free of such restrictions, can only result in further diversion of business to other forms of transportation, in less money for railroads to meet the wage bill, and in reduced railroad employment.

"Should Congress pass the Wheeler-Crosser bill (S. 4174—H. R. 11609), the improving prospects of the railroads would be blocked. Its passage would work measureless harm not only to railroads, railroad owners and the general business of the country which depends upon rail transportation, but also to the very railroad workers in whose supposed interest it is being pressed. The bill assumes that railroad business will never get better, and that, therefore, it is to the interest of employees to freeze railroad service and employment at its present level. That could mean but one thing, an industry set in *rigor mortis*, with business, revenues, employment and wages shrinking steadily

as other means of transportation, free to meet conditions as they arise, take away business, revenues and wages from railroads and railroad men."

The Interstate Commerce Commission, in submitting its comments on the bill to the House committee on interstate and foreign commerce some time ago, declined to go beyond its previous recommendations that further statutory provisions be enacted to protect employees from undue financial loss as a consequence of authorized railroad abandonments or unifications and that the subject of dismissal compensation be given consideration by Congress. The letter, by Commissioner Frank McManamy, chairman of the legislative committee of the commission, included the following:

"H. R. 11609 appears to be intended to afford protection for employees of carriers against loss of employment and other losses suffered by them as a result of the consolidation or abandonment of carrier facilities.

"The bill is very broad in its application and if enacted will require detailed supervision by the commission over any proposed consolidation or abandonment of carrier facilities. This applies not only to major consolidations of two or more carriers but also to relatively minor consolidations of the facilities of a single carrier such as the consolidation of two yards, offices or stations, or possibly even to changes within such yards, offices or stations. The procedure specified in the bill applies in each case and appears unnecessarily cumbersome except in the case of consolidations, unifications or abandonments which require authorization under the provisions of the interstate commerce act."

The letter then referred to the recommendations in the commission's annual report and to a suggested amendment to Section 5 of the interstate commerce act to give effect to them, which had been submitted to the Senate committee at the request of Senator Wheeler, saying: "It will be noted that our proposals are much simpler and less cumbersome than the bill under consideration and will afford railroad employees relief in all consolidations and unifications authorized under the provisions of the interstate commerce act. Without entering upon any detailed criticism of the bill, the commission as at present advised cannot go beyond its previous recommendations as above outlined in recommending legislation along the lines of the proposed bill."

The amendment so suggested consisted of inserting a new paragraph designated (c) following paragraph 4 (b) of Section 5, which would read as follows:

(c) Whenever it shall appear to the Commission that as a result of any authorization made by it under the provisions of this section or certificate made under paragraphs numbered (18) to (20), both inclusive of section 1 of this part, employees of any common carrier affected by any such authorization or certificate will sustain property losses or incur expenses, or both, by reason of transfer of their work from one locality to another, the Commission is hereby authorized to impose as a condition precedent to such authorization or certificate a requirement that the carrier or carriers receiving such authorization or certificate shall make just compensation to such employees for their property losses or expenses so sustained or incurred. In the event any such applicant accepts such authorization or certificate, and it and any of the employees so affected are unable to agree upon the amount of such compensation, if any, the fact and amount of such property losses or expenses shall be determined and payment required as with respect to damages for other violations of this part, under the provisions of and in the matter set forth in sections 8 and 9 hereof, and jurisdiction for such purposes is hereby conferred upon the Commission and the district courts of the United States, respectively, as provided in sections 8 and 9 hereof. The power and authority conferred upon the Commission by this paragraph shall not be construed as impairing or diminishing the power and authority of the Commission to impose any other similar or other lawful conditions, and shall not be held to exclude or interfere with other remedies, powers, duties, and rights under this or any other law.

The sub-committee of the House committee to which



the bill was referred has recommended modifications which meet in part the objections made by the railroads, intended to exempt from the provisions of the bill reductions in service or employment to meet temporary, emergency or seasonal conditions.

Instead of resuming this week hearings on the Wheeler-Crosser bill which were temporarily adjourned on April 17 Chairman Wheeler of the Senate committee on interstate commerce conferred with J. J. Pelley, president of the Association of American Railroads, and George M. Harrison, chairman of the Railway Labor Executives' Association, to urge further efforts to bring about an agreement between the railroads and labor on a plan of dismissal compensation for employees displaced by co-ordination or consolidation. It had been planned to hear further R. V. Fletcher, general counsel of the railroad association, a representative of the American Short Line Railroad Association, and Co-ordinator Eastman. Arrangements were then made for further negotiations before the end of the week between the railroad and labor committees and Senator Wheeler said that unless progress was made hearings would be resumed on the bill.

## "Bike to Nature" at \$2 a Head

(Continued from page 728)

manager of the railroad, and R. H. Pusch and J. V. Whalen, general passenger agents, assisted by district passenger officers from New York and Pittsfield, Mass. The outing was obviously successful, as a beginning, and the company is planning to operate similar trains each Sunday for at least the next few weeks. Whether patronage such as that developed for the ski trains during the past winter will be forthcoming is perhaps doubtful, because of the difficulty of obtaining sufficient bicycles to accommodate all patrons who wish to rent them. But public demand will serve at least to some degree to lessen this limiting factor.

Other railroads are interested in the venture and plan to operate cycle trains during the next few weeks. The public in the New York metropolitan area is going to be given an opportunity to show whether their interest in push-biking can be revived in this gasoline age. Meantime ingenious minds in the passenger traffic departments are turning over other schemes for bringing the man with the dollar to the railroads, after his long desertion to more gaudy attractions. The comment that railroads are amateurs at merchandising will soon have to be made in the past tense, if at all.

\* \* \*



The "Ambassador"—Boston-Montreal Train—on the Central Vermont

## Odds and Ends . . .

### President Downs Signs a Pass

L. A. Downs, president of the Illinois Central, always signs employees' 40-year service passes personally, in order to honor the veterans. Recently he signed a pass made out to 40-year veteran L. A. Downs in the presence of a number of officers and employees of the Illinois Central and Chicago newspaper men. The new pass will doubtless be the prize exhibit in President Downs' collection of passes, which is one of his hobbies.

### The C. P. Huntington Runs Again

When the Mississippi River bridge of the New Orleans Public Belt was dedicated last December 16, one of the outstanding attractions was the crossing of the bridge under its own steam of the famous Southern Pacific locomotive "C. P. Huntington." This locomotive, which was built in 1863, first saw active service at Sacramento, Cal., on April 6, 1864, after having been shipped there by sailing vessel around Cape Horn from the builder's plant at Paterson, N. J.

### Department Heads

"Why confine long service records of officers to the passenger traffic department?" asks George Boyce, superintendent of telegraph and signals of the Chicago, St. Paul, Minneapolis & Omaha. Mr. Boyce points out that, since that railway was organized, there have been just two heads of its telegraph and signal department, H. C. Hope, who served from 1880 to 1909, and Mr. Boyce himself, who has served from 1909 to date, an average service record of 28 years.

### Oldest Commuter

Robert Wardrop of Pittsburgh, Pa., was officially recognized in January, 1928, as being the senior commuter on the Pennsylvania System. Mr. Wardrop, chairman of the First National Bank, is the oldest banker in Pittsburgh, and is also a director of the Federal Reserve Bank in Cleveland, Ohio. He lives in Edgeworth, 13 miles down the Ohio river, and has used a commutation ticket between the two places every month since September, 1868, 67½ years. Having waited eight years for his Pennsylvania seniority to be challenged, he is now using this column to claim, unless authentically disputed, that he is the oldest commuter in the United States.

### Railroad Buys Mine to Prevent Mining

The only recorded purchase of a coal mine in order to prevent the mining of coal has just been announced. The London, Midland & Scottish of England recently bought an important coal mine, one of whose principal veins passed beneath its tracks between Nuneaton and Tamworth in Staffordshire. The company's object is to prevent the mining of coal and the consequent weakening of its roadbed. Mining, carried on recently in the vein, caused railroad authorities to limit train speeds through the area to 30 m.p.h., which led to a two-minutes' delay of every train on the line. Now the mining will be stopped, the coal mine filled up and shut off, and trains will return to their normal speed of 65 to 75 m.p.h. through the area.

### 81 Years' Service

This department has had frequent occasion to comment on the service record of John M. Horan, boiler washing inspector for the Chicago, Milwaukee, St. Paul & Pacific. But each anniversary of his service record is news, big news, for his record is not only unequalled but it may also safely be said that it never will be equalled. On April 17, Mr. Horan, hale and hearty at 98, celebrated his 81st consecutive year of service with the Milwaukee by working as usual and smoking his customary can of pipe tobacco per day. In all his service, which has embraced numerous positions, Mr. Horan has never suffered an accident, and, during his years of service as an engineman, he never missed a call because of sickness. His son, Bill Horan, engineman for the Milwaukee, is a mere youngster by comparison, having compiled a service record of only 51 years.



# NEWS

## Eastern Railroads Planning Court Test of Fare Order

But meanwhile will file tariffs making prescribed rates effective on June 2

Executives of Eastern railroads, other than the Baltimore & Ohio and its affiliates, decided at a meeting of the Eastern Presidents' Conference in New York on April 28 to contest in court the recent reduced-fare order of the Interstate Commerce Commission, while at the same time filing tariffs making effective on June 2 the rates required by the order—two cents per mile in coaches and three cents per mile in Pullmans without surcharge.

The announcement following the meeting stated that all Eastern roads, with the exception of the Baltimore & Ohio, the Reading and the Central of New Jersey "are expected to join in this action." These three roads along with the Western Maryland have already announced their intention of accepting without protest the rates prescribed by the commission.

In the court test the roads, led by the Pennsylvania, the New York Central and the New York, New Haven & Hartford, are expected to base their case on the contention that the commission's order constitutes an unconstitutional invasion of the field of management. Trustees for the New Haven last week obtained permission from the United States District Court at New Haven, Conn., to join in any court test of the constitutionality of the Commission's order. Meanwhile Howard S. Palmer, president of the road, announced that the New Haven would "do everything possible to make money out of the increased volume of travel that should result from the reduced rates."

It was indicated that some Western and Southern roads might join in the court test. While these roads have had reduced fares in effect for some time on an experimental basis and thus the commission's order will not have the effect of lowering their rates, it will be recalled that during the passenger fare investigation the Western roads took the position that the 3.6 rate with surcharge, if again applied by them, would produce aggregate charges which would not be unlawful and thus they asked that the commission, leaving them to work out the problem, make no order as to their fares.

The commission on April 20 issued a special permission order stating that the publication of new passenger tariffs under the usual regulations to become effective

### The Answer

Government regulation of railways having originally been adopted upon the ground that there was a lack of competition in transportation, the *Railway Age* would like to be told by somebody upon what theory of consistency or reasonableness the fact that railroads are now confronted with competition upon every hand can be made a ground for increased government interference with their management.

The answer is easy, though there may be nothing logical or consistent about it. It lies in the increasing political power that goes hand in hand with increasing bureaucracy.

—From the *Chicago Daily Drivers Journal*.

on June 2 would be extremely burdensome and therefore authorizing the railroads (except the Baltimore & Ohio and Western Maryland, which had already arranged for similar permission), and their duly authorized agents now having tariffs in which the present standard one-way fares are 3.6 cents a mile when revising their fares in accordance with its order to publish and file supplements or blanket supplements to the current tariffs, including a reference to master conversion table tariffs. These are to be cancelled and superseded by tariffs fully complying with the commission's regulations within 90 days.

The commission has issued a supplemental report in the passenger fare case excepting certain short line railroads from the general order and permitting them to file higher rates of fare because of their special circumstances, as follows: Yosemite Valley, 6.2 cents a mile one way and 4.3 cents a mile round trip; Tonopah & Tidewater, 4 cents a mile; Uintah, 6½ cents; Virginia & Truckee, 4 cents a mile; McCloud River, 5.7 cents a mile. The Denver & Salt Lake was also authorized to add 20 constructive miles to the actual distance via the Dotsero cut-off.

The proceeding was also re-opened for consideration as to whether any additional exceptions shall be made.

### N. Y. Railroad Club Outing June 18

The annual summer outing and golf tournament of the New York Railroad Club will be held on Thursday, June 18, one week earlier than the date previously announced. As in recent years, the outing will be held at the Westchester Country Club, Rye, N. Y.

## Commission Issues Notice Warning Highway Carriers

Cites complaints that tariff rates are not open to inspection nor adhered to

The Interstate Commerce Commission on April 28 issued a notice to motor carriers saying it is receiving numerous complaints that certain passenger and property carriers by motor vehicles are not collecting the rates, fares and charges lawfully on file and that complaints are also being received from shippers and competing carriers that the tariffs and schedules are not being made available for public inspection.

Attention is called to the provisions of the motor carrier act of 1935 on these points and to the penalties which it provides for violations.

In another notice the commission said:

"It has come to the commission's attention that numerous carriers have published rates, fares, charges, or rules in tariffs issued in their name which duplicate or conflict with rates, fares, charges, or rules issued for their account in tariffs of duly authorized agents. As above indicated, publication of such rates, etc., by both the carrier and its agent, is improper and must be discontinued. Each carrier who has published rates, fares, charges, or rules which duplicate or conflict with those published for its account by a duly authorized agent will be expected to cancel such tariffs which have been issued by it or arrange with its agent to cancel from the agency tariffs the rates, fares, charges, or rules which duplicate or conflict with those published in its separate issues. A tariff, however, can be supplemented or canceled only by the carrier or agent who issued it; therefore, a carrier cannot supplement or cancel a tariff issued by an agent.

"If a carrier whose rates are now published by a duly authorized agent wishes to publish its rates in tariffs issued in the name of the carrier, such carrier should arrange with the agent to cancel its rates from the agency tariff. When that has been done a carrier may publish its tariff effective on the same day on which the withdrawal of rates in the agency tariff is effective. Both publications must give lawful notice and the agency publication canceling the rates and charges of an individual carrier must provide reference by MF-I.C.C. number to the carrier's tariff for rates and charges to apply after the cancellation in the agency tariff becomes effective."

## Rail Minister Proposes End to C.N.R. Trustees

Offers bill to substitute seven-member directorate with S. J. Hungerford as chairman

The most important railway legislation before the Canadian Parliament since that of 1933 which sought to carry out the recommendations of the Duff Commission was introduced in the House of Commons on April 27 by Hon. Clarence D. Howe, Minister of Railways and Marine. It provides for the substitution of a board of directors of seven members for the present board of three trustees to direct the destiny of the Canadian National. Mr. Howe's bill was given second reading after a day's debate but it will spend a considerable time in committee of the whole and also a determined opposition to it is promised in the Senate where the Conservatives, led by Senator Arthur Meighen, have a majority. It is not conceivable that they would throw the bill out and thus defy the Liberal government majority in the House but they will give the measure a rough ride and change it as much as they dare short of rejecting its central principle.

Throughout the earlier period of the Canadian National and when the Liberals had the reins of power, between 1921 and 1930, Sir Henry Thornton was president of the C. N. R. and also head of the board of directors, numbering seventeen. That board proved too large and made the road too susceptible to local and political interference. When Mr. Bennett took power he had the Duff Commission probe the whole problem. The report recommended what amounted to bankruptcy proceedings for the C. N. R. and put the road in the hands of a board of three trustees, with Hon. Charles P. Fullerton, formerly chairman of the Dominion Railway Board and previous to that a Judge in Manitoba, as chairman, while Samuel J. Hungerford was president and presumably in charge of operations.

When the Liberals came into power again last fall the new Minister of Railways and Marine, Hon. C. D. Howe, was deeply dissatisfied with the results of the trustee system of operation. The trustees, he told the House, had failed to effect the co-operative economies with the Canadian Pacific which the Duff Commission urged; the chairman, he contended, had usurped too many duties and functions belonging to the president and operating head. He decided to go back to a small board of directors and give more power and authority to the operating head. He also made it plain, without mentioning his name, that Mr. Hungerford will be both president and chairman of the board in the new set-up. The legislation was hotly opposed by the Conservatives, led by Mr. Bennett, on the ground that it was a return to political control of the C. N. R.

"It is common knowledge," said Mr. Howe at the outset, "that the three trustees have made no real progress toward the improvement of our railway situation." They have, he averred, failed to achieve any substantial co-operative economies,

## Regulatory Folly Invites Chastisement

Legislation [such as the Wheeler-Crosser job-freezing bill] by pressure-groups is bad business standing alone, but backed by that *Dummheit* which the German proverb declares to be invincible even by omnipotence, it invites chastisement by destiny, and it is not destiny's habit to slight such invitations. It is long since railroad regulation in practice and railroad legislation in prospect have at one and the same time presented so depressing a spectacle as in this year of grace to date, for stupidity has marked most of it and for that there seems to be no remedy.

—Thomas F. Woodlock,  
in the Wall Street Journal

and from their own published statements the prospects for future results along this line are not bright. Neither have they been able to secure any considerable reduction in the railway's operating costs.

The internal situation in the management of the road was no better, the Minister contended. Everywhere Canadian National employees regarded the trustee method of direction with "distrust and suspicion." This is largely due, he said, to the fact that the president of the road, who was supposed to be in charge of operation, had been subordinated to the trustees, "who know nothing of actual railway practice." The trustees themselves, he added, had confided to him that the present system of management was not good. Moreover, there was serious lack of agreement among the trustees.

Giving a hint as to who would be named to hold the positions of chairman and president, Mr. Howe said, "fortunately the Canadian National Railways have a man who is not only outstanding as a railway executive, but who has the respect of the Canadian people and of railway labor, and the confidence of this Government. The 1933 legislation eliminated that part of the Duff report which specifically debarred holders or former holders of public office; the present bill removes the disability which would operate against the employees of the Canadian National Railways in the selection of chief executive."

The Conservative Leader, the Rt. Hon. R. B. Bennett, declared that if the Minister expected to get far with this bill the first thing "he must do is to call the special railway committee together at the earliest possible moment, to afford the chairman (Mr. Fullerton) an opportunity of presenting his defense to the charges that have been made against him." He suggested that responsibility for the condition of the C. N. R. lay with the Liberals when they were previously in office.

## Illinois Central Locomotive—A Correction

On page 649 of the April 18 issue of the *Railway Age* the maximum speed of the Illinois Central 1,800-hp. Diesel-electric locomotive is given as 69 m.p.h. This should have been 60 m.p.h.

## Shall Profit or Political Motives Rule Industry?

America must choose, says Dunn; and burden of proof rests with advocates of change

"The most vitally important economic fact with which the American people are confronted during this period of unprecedented discussion of great economic problems has seldom been emphasized, or even clearly stated," said Samuel O. Dunn, chairman of the Simmons-Boardman Publishing Company and editor of *Railway Age*, in an address on April 24 to faculty members and students of DuPauw University at Greencastle, Ind. "This most vitally important fact is that the people must choose and, indeed, are now choosing whether they will have the management of their commerce and industry dominated in future principally by the *profit* motive or by the *political* motive.

"As long as we have a democratic government there simply cannot be any other choice, although few seem to realize it. There is only one alternative to private management of business. This is government management. Under democratic institutions the political motive necessarily and inevitably dominates in all government affairs, and would necessarily and inevitably dominate in government management of business. It dominates now in all activities of government; and the more government influences business the more business will be subject to political influence.

"Many of the effects produced by the dominance of the profit motive in private management of business are condemned, and with good reason. But if we are to deal intelligently with any or all of our great economic problems, we must ask and answer the question whether the effects produced by the dominance of the political motive probably would produce better or worse effects. Under an economic system heretofore dominated by the profit motive we have created much the greatest wealth per capita, and provided the greatest income per capita for all classes, that ever have been created and provided in the history of the world. The burden of proving that substitution of the political motive for the profit motive would cause better results for the people as a whole plainly rests upon those who favor such a revolutionary change.

"This is the most vital question that must be faced in considering whether it is desirable to change from private ownership and management of railways to government ownership and management. Many criticisms of private railroad management are made. It is said that because the managements of the railways are chosen now by representatives of private capital they are dominated too much by the profit motive—that consequently abuses in financing result, labor is not always fairly treated and operation is not always efficient. Because the railways are privately-owned and managed, we have government regulation to deal with abuses and shortcomings resulting from dominance of the profit motive. Both private management and gov-



ernment regulation are imperfect and their results in many ways unsatisfactory. But we may well ask ourselves whether government management dominated by the political motive would produce better results, and especially by what agency or means abuses and shortcomings resulting from dominance of the political motive would be remedied if the government itself owned and were managing the railroads?

"Compare—or contrast—the management of the railways with that of the federal government within the last decade. The average annual gross earnings of the railways declined from \$6,207,000,000 in the five years 1925-1929, inclusive, to \$3,793,000,000 in the five years 1930-1934, inclusive, or \$2,414,000,000 a year. Meantime they reduced their average annual operating expenses from \$4,543,000,000 to \$2,850,000,000, or \$1,693,000,000 a year.

"The ordinary receipts of the federal government declined from an annual average of \$3,990,000,000 in the five years 1925-1929, inclusive, to \$3,026,000,000 in the five years 1930-1934, inclusive, or \$994,000,000. What happened, meantime, to the ordinary expenditures of the government—that is, exclusive of those made for relief and other emergency purposes? They increased from an annual average of \$3,107,000,000 in the five years 1925-1929, inclusive, to an average of \$4,606,000,000 in the five years 1930-1934, inclusive, or almost \$1,500,000,000 annually.

"While the railways were reducing their average annual operating expenses 37 per cent, the government was increasing its ordinary expenditures 48 per cent.

"In the five years before the depression the average annual operating expenses of the railways were \$1,436,000,000 more than the ordinary expenditures of the government. In the first five years of the depression—under administrations representing two different political parties—the annual expenditures of the government were \$1,757,000,000 more than the annual operating expenses of the railways.

"Whatever is spent, whether by the government, the railroads or any other agency or industry, must be paid, directly or indirectly, by the American people. The reduction in railway operating expenses during the depression has been due to the dominance of the profit motive in railway management. The increase in ordinary government expenditures has been due to the dominance of the political motive in government. The political motive, instead of the profit motive, would have dominated in railroad management if the government had owned the railways. Consequently, there would not have been any such great reduction in railway operating expenses, and a huge railroad deficit would have been incurred. Who would have had to pay this deficit? Those who will have to pay for the great increase in the ordinary expenditures of the government—the taxpayers of the country, who include all the people, whether they all realize it or not.

"When I refer to the political motive I use the word 'political' in the broadest sense. I mean that government management of railways, excepting at least in autocratic countries, always has been and always will be subject to effective political

pressure as respects the selection of official personnel, the number of persons who shall be employed, the lines that shall be built, the service that shall be rendered and so on, and that this political pressure inevitably and seriously hinders efficiency and economy in operation. The resulting unnecessarily excessive operating expenses cause either unnecessarily high rates or deficits that must be paid by the taxpayers—usually the latter.

"The dominance of the profit motive in private business causes abuses, but the dominance of the political motive in government also causes abuses; and experience demonstrates that dominance of the profit motive in the management of railroads or any other industry usually produces better results as a whole for the public—that, in fact, dominance of the profit motive is essential in any industry to the most economical operation consistent with good service."

### Tennessee Rates Found Not Unduly Discriminatory

The Interstate Commerce Commission has issued a report finding that the failure of the Railroad and Public Utilities Commission of Tennessee to authorize emergency increases in intrastate freight rates corresponding to those applied to interstate rates has not been shown to result in undue discrimination against interstate commerce.

### Eastern Section R. F. P. A. to Meet May 11

A meeting of the Eastern Section of the Railway Fire Protection Association will be held at 2:30 p.m. on May 11 at Haddon Hall, Atlantic City, N. J., the meeting being on the same day as the annual meeting of the National Fire Protection Association. A meeting of the executive committee of the eastern section will be held at 2 o'clock.

### Wollner Begins Twentieth Term as Pacific Railway Club Secretary

William S. Wollner, general safety and welfare agent of the Northwestern Pacific, was recently re-elected secretary of the Pacific Railway Club for his twentieth consecutive term. He has held that office since the organization of the Club. The results of the election of other officers for the ensuing year were reported in the *Railway Age* of March 28, page 556.

### Lower Fares in Canada

The Canadian railways on June 1 will inaugurate reductions in passenger fares averaging 13 per cent under those now in force. The present one-way rate of approximately 3.4 cents a mile will be reduced to about 3 cents (for tickets good in coaches). The round-trip rate will (for coach travel) be reduced from about 3 cents to approximately 2.7 cents, with the return limit extended from thirty days to six months. The week-end rate in coaches will be reduced from approximately 2.2 cents to about 1.9 cents.

There will also be reductions in sleeping car rates. For example a lower berth between Montreal and Toronto, now cost-

ing \$3.10, will be reduced to \$2.50. The rates quoted do not include the transportation tax.

### Another R. C. C. Distribution

The Railroad Credit Corporation on April 30 made its twenty-sixth liquidating distribution to participating carriers, amounting to \$735,881, or one per cent of the contributed fund. Of this amount \$387,158 was paid in cash and \$348,723 was credited on carriers' indebtedness to the corporation. This brings the total amount distributed to 43 per cent of the fund or \$31,642,870. Of this total \$14,754,895 has been returned in cash and \$16,887,975 in credits.

### Tax Bill Passed By House

The new tax bill, to substitute for the existing system of federal taxes on the income and capital stock of corporations a new plan of taxing the net income by graduated amounts related to the proportion paid out in dividends and then taxing the dividends as received by the stockholders, was passed by the House on April 29. It now goes to the Senate where it is expected that it may be largely rewritten, following hearings before the Senate finance committee.

### Progress in Grade Crossing Program

Plans for the elimination of hazards at grade crossings under the \$200,000,000 U. S. works program had been approved by the Bureau of Public Roads to the amount of \$103,897,000 up to April 25 and contracts had been awarded to the amount of \$63,157,325, including \$4,068,038 during the week.

"Nothing has been more productive of a growing friendly and intelligent working together of highway and railway officials than the grade crossing elimination programs that have been made possible, starting with the public works program of 1933 where the construction costs were carried from public funds," said Thomas H. MacDonald, chief of the Bureau of Public Roads, in an address at the meeting of the Chamber of Commerce of the United States at Washington on April 29.

### R. & L. Historical Society

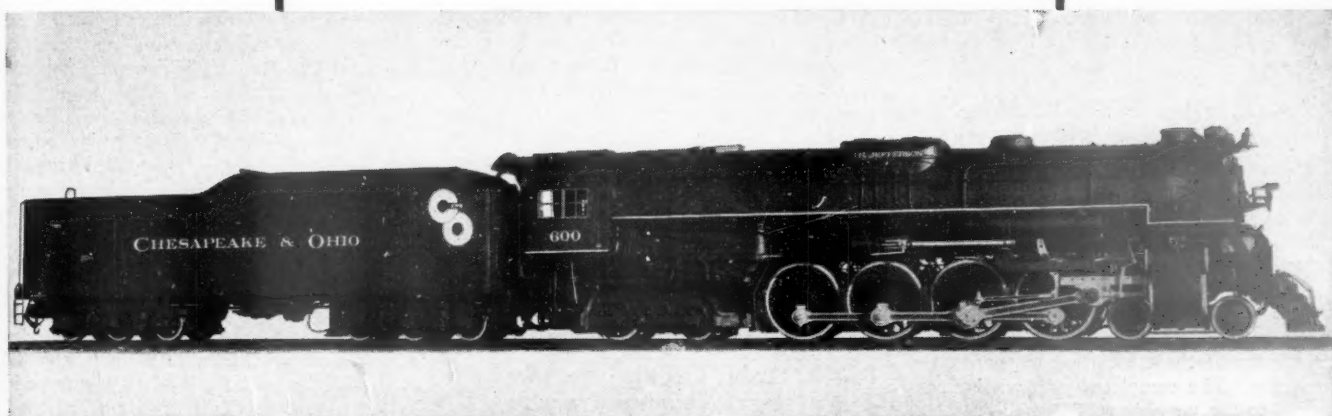
W. J. Coughtry, recorder of the Delaware & Hudson Railroad Corporation, has been elected chairman of the New York Chapter, Railway & Locomotive Historical Society, Inc. Other officers, chosen at the meeting of the board of directors on April 21, are: Vice-chairman, L. B. N. Gnaedinger; secretary, R. C. Schmid; treasurer, C. F. Graves. At the annual meeting of the Chapter on April 10, Mr. Coughtry was re-elected and Mr. Gnaedinger and William J. Rugen were elected directors for three year terms.

### I. C. C. to Hold Further Hearings on Motor Carrier Insurance

The Interstate Commerce Commission has assigned for further hearing at Washington on May 12 the matter of insurance protection as to motor carriers for the purpose of receiving further evidence, including information as to claim payments being prepared by certain insurance com-



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panies and agents and by certain operators, at the request of the Bureau of Motor Carriers. Immediately following the hearing opportunity will be given for oral argument.

### **Frisco Speeds Up St. Louis-Oklahoma Freight Service**

The St. Louis-San Francisco has established a merchandise freight train known as the Frisco Flash on a schedule of 13 hrs. for the 425 mi. between St. Louis and Tulsa, Oklahoma. The train, drawn by a passenger locomotive, leaves St. Louis at 7:30 p.m. and arrives in Tulsa at 8:30 a.m. and Oklahoma City at 12:30 p.m. Heretofore merchandise leaving St. Louis at 8:30 p.m. arrived in Tulsa at 1:00 p.m. and at Oklahoma City at 6:00 p.m.

### **A. A. R. Plans Public Relations and Advertising Program**

Plans for a broader program of public relations and advertising for the Association of American Railroads and the railroad industry in general were approved in principle by the board of directors of the association at a meeting on April 24 in Washington. After taking this action the board referred the matter to the executive committee of the association to perfect the program. The completed plan will be presented to the member roads of the association at a meeting to be held in the near future.

### **Apache Speeded Up**

The Rock Island and the Southern Pacific will on May 3 place the eastbound "Apache" on a schedule of 59¼ hrs. between Los Angeles and Chicago, a reduction of five hrs. The westbound schedule of the train will remain the same, 61¼ hrs. The train will leave Los Angeles at 8:30 a.m. instead of 12:15 p.m. and will arrive in Chicago at 10:45 p.m. the third day instead of 6:30 a.m. the fourth day. Coincident with this change low cost meals, 25 cents for breakfast, 30 cents for luncheon, and 35 cents for dinner will be made available to coach and tourist car passengers.

### **Experimental Construction of Tank Cars Authorized**

Upon reconsideration the Interstate Commerce Commission has granted authority which it had previously denied to the Union Tank Car Company to construct for experimental service 15 tank-car tanks fabricated by the fusion welding process and to use in experimental service 10 tanks already constructed. Similar authority was granted to E. I. duPont de Nemours & Co., for the construction of one tank of nitric acid resistant metal by the fusion welding process and to the Phillips Petroleum Company to construct 25 tanks by the fusion welding process.

### **Argument in Surcharge Case Set for May 20**

Hearings before Commissioner Aitchison of the Interstate Commerce Commission on the petition of the railroads for a continuation of the temporary emergency increases or "surcharges" in freight rates

authorized by the commission in Ex Parte No. 115 were concluded on April 27 and the commission has assigned the case for oral argument at Washington on May 20. Continuation of the surcharge as to bituminous coal was opposed by representatives of the National Bituminous Coal Commission on the ground that any addition to the transportation cost of coal encourages the use of other fuels.

### **Lower Rates Proposed for Albany, N. Y.**

Examiner Charles M. Bardwell of the Interstate Commerce Commission has recommended in a proposed report that the commission find unreasonable and unduly prejudicial the rates on import, export, coastwise, and intercoastal traffic between the port of Albany, N. Y., and points in central territory, western trunk line territory, and a portion of eastern trunk line territory. He also recommended as reasonable bases of rates including in some instances differentials under the rates via New York or Baltimore and a finding that the failure of the New York Central Lines to absorb wharfage and handling charges at Albany to the same extent that they absorb such charges at Boston, Mass., is unduly prejudicial to Albany.

### **P.W.A. Loan Proposed for Bayonne Freight Terminal Project**

A revised contract covering the \$5,252,045 loan and grant to be made by the Public Works Administration to the city of Bayonne, N. J., for the construction of a ship-to-rail freight terminal on the Bayonne waterfront in New York Harbor is to be submitted by the P.W.A. to the city with numerous provisions intended to protect the city's interest in the property not incorporated in the first agreement written last year. Of the amount, \$2,252,045 is to be a grant and \$3,000,000 a loan to the city, which is to lease the property to the Central District Corporation for operation. Among the requirements are that the corporation shall enter into a contract satisfactory to the P.W.A. with the Central of New Jersey, covering among other things the railroad's commitment to purchase certain securities of the Central District, and that the facilities and services shall be made available to all users of the terminal without discrimination.

### **Truckers Oppose Rail Proposals for Substitute Highway Service**

Another controversy between the railroads and the truckers as to the interpretation of the motor carrier act has been precipitated by applications filed by railroad tariff-publishing agents for Interstate Commerce Commission permission to continue in their tariffs of I.C.C. rates a clause providing for the substitution of highway vehicle service for rail service between rail stations at the usual rates. The commission had permitted such provisions to be included for temporary periods expiring May 31 and June 1 and the railroads are asking that they be continued until further order of the commission but if the commission concludes that an expiration date is necessary it is asked that it be fixed not earlier than one year from May

31. The American Trucking Associations, Inc., has filed a protest, taking the position that what is proposed amounts to operation of motor carriers without certificates or permits.

### **I.C.C. Inquires As to Railroad Investments in Motor Carrier Enterprises**

In accordance with an order entered by Division 4 on April 20 the Interstate Commerce Commission has issued to Class I railroads, excluding switching and terminal companies, a questionnaire calling for information as to their investments in highway motor vehicle enterprises to be furnished by July 1. The information asked includes the name of the enterprise, nature of respondent's interest, amount and per cent of capitalization held by respondent, assets of highway enterprise, revenues, and date of first acquisition. Questions are also asked as to whether any of the railroad's directors or officers and assistants have a financial interest in excess of \$5,000 in any highway motor vehicle enterprise, whether any holding company affiliated with the railroad has a controlling financial interest in any such enterprise, and respondents are required to furnish copies of income and profit and loss accounts and balance sheets, as well as a statement of the nature and extent of the operations of the highway enterprises in the calendar year 1935 as far as available.

### **Senate Investigation of M. & St. L. Sale Proposed**

Senator Benson, of Minnesota, has introduced in the Senate a resolution proposing an investigation by a select committee of five Senators of "the social and economic effects and the financial advisability or inadvisability" of the proposed sale of the Minneapolis & St. Louis to the Associated Railways, as well as of "the origin of the dismemberment proposal" and "the propriety of the activity of agents of the Reconstruction Finance Corporation in appearing as proponents of the dismemberment and sale." The resolution would also request the Interstate Commerce Commission to withhold approval of such dismemberment and sale until the committee shall have completed its investigation and reported to the Senate at the next session of Congress.

The Minneapolis business men's committee, organized to prevent the sale, started its campaign for public support on April 22 with a plan to raise a \$15,000 Minneapolis defense fund; this money to go into the \$50,000 fund that is being contributed by employees of the M. & St. L. and communities and industries that it serves in Minnesota, Iowa, South Dakota and Illinois. The defense fund is designed primarily to meet expenses at further I. C. C. hearings at Minneapolis, Fort Dodge, and Aberdeen.

### **Objects to Tolls on New York State Canals**

The New York State Waterways Association has issued a pamphlet urging defeat of the Shaver-Stokes bill, now pending in the New York legislature, to amend the New York constitution by re-

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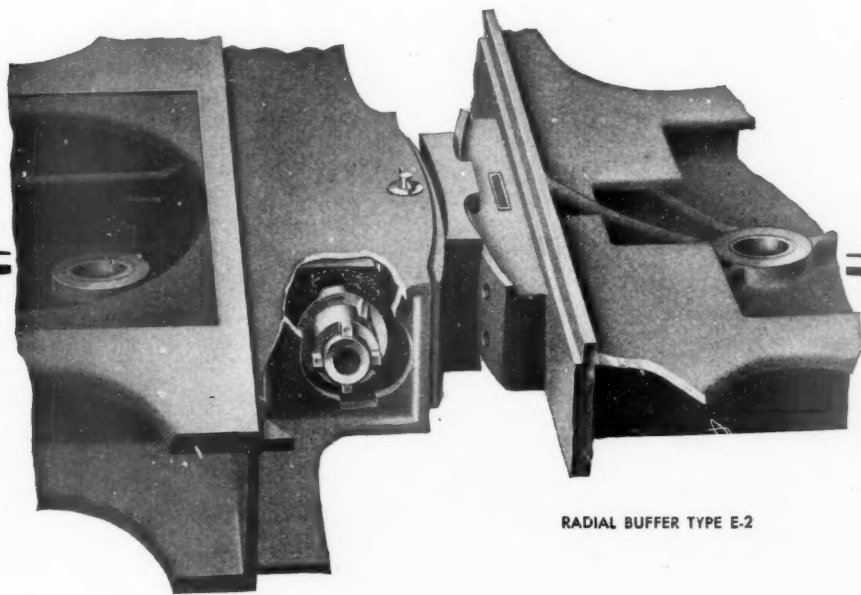
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Then came iron blocks that were rigid. Neither provided the necessary flexibility.

Then came radial buffers. But only the Radial Buffer Type E-2 provides ample controlled resistance to compression with freedom of vertical, horizontal and rolling movement.

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moving the provision prohibiting toll charges on New York canals. The pamphlet contends that the legislation is devised to further the interest of the railroads and charges that data in connection with the New York State Barge Canal being distributed by the Associated Railroads of New York State are "erroneous and exaggerated."

It seems that, among other omissions, this proponent of tolls did not include the interest on the canal bond sinking fund to offset in part the interest accruing on outstanding canal bonds. As the Waterways Association calculates it the "cost to the State is less than the accruing benefits." The total appropriation for all canal purposes in 1935 is set up at \$8,405,998, while the "benefits" are calculated to be "millions." Several "tangible annual savings credited to the canals" are listed but only two are assigned a specific value—\$8,000,000 savings to farmers and urban consumers on fertilizer, feeds, gasoline, flour, canned goods, building material, kerosene and fuel oil carried on the canal; and \$5,000,000 in employment and relief from Federal aid improvement on the canal. Opposite three other items in the "benefits" list only the entry "Millions" is made to estimate the cash value, while opposite two others appears "Not Estimated."

### New Jersey Roads to Appeal Tax Board Ruling

New Jersey railroads will contest in court the recent order of the New Jersey State Board of Tax Appeals denying their petition for a reduction of 1935 assessments for taxation purposes on their property in that state. As pointed out in the *Railway Age* of February 15, page 293, this taxation litigation of the New Jersey roads was launched in 1931, the case for that year having been finally disposed of by a denial of the railroads' petition. The 1932, 1933 and 1934 cases are now before the Federal courts and the present decision of the Board of Tax Appeals will have the effect of transferring the 1935 case there also. A little over \$7,000,000 is involved in the 1935 case while approximately \$19,000,000 in unpaid taxes is involved in cases pending for the three previous years.

Meanwhile, because of New Jersey's need for revenues for relief purposes, there has recently been talk of some compromise with the railroads in connection with these cases. For 1936 the valuation for taxation purposes of railroad terminal properties in Hudson county, New Jersey, has been cut by 10 per cent as compared with the previous year. Counsel for the railroads are confident in view of the recent decision of the United States Supreme Court holding to be grossly excessive the assessments of the property of the Great Northern by the North Dakota State Board of Equalization. This decision was reported in the *Railway Age* of February 8, page 254.

### New York Passenger Traffic

Railroads and ferries carried 2,443,532 fewer passengers into and out of New York during 1935 than in 1934, according

to the annual compilation issued by the Transit Commission of New York. At the same time the Holland tunnel and the George Washington bridge reported increases in traffic—the former 5.6 per cent and the latter 3.9 per cent. The decrease in rail and ferry commuters was 1,907,262.

During 1935, 271,587,295 passengers of all classes were carried into and out of New York City on railroads and ferries, as compared with a 1934 total of 274,020,847. Trunk Line railroads showed a falling off from 187,046,647 passengers in 1934 to 185,353,718 in 1935. Passengers carried on the Hudson & Manhattan decreased from 74,295,562 to 73,994,971, while those carried by privately-owned ferries, including railroad ferries, dropped from 28,424,906 to 27,851,810. Vehicular traffic on the privately owned ferries showed an increase of 662,289, the figures being 12,351,867 in 1934 and 13,014,156 in 1935.

Of the 271,587,295 passengers entering and leaving the city last year, 213,056,278 were commuters. The report points out that these figures represent two-way traffic, so that the actual number of people entering the city by railroad and ferry routes was 135,793,648, of whom 106,528,139 were commuters. The following table gives a comparison of the total traffic on the railroads other than the Hudson & Manhattan in and out of New York for 1934 and 1935:

	1935	1934
Baltimore & Ohio.....	344,049	331,703
Central of N. J.....	12,600,492	12,695,762
D. L. & W.....	16,208,319	16,272,587
Erie.....	17,201,507	17,910,828
Lehigh Valley.....	501,876	551,511
Long Island.....	64,150,627	64,766,986
New York Central.....	28,325,744	29,142,646
N. Y., N. H. & H.....	12,481,970	12,177,705
N. Y., O. & W.....	157,023	165,084
N. Y., W. & B.....	7,811,330	7,745,590
Pennsylvania.....	25,570,781	25,286,245
	185,353,718	187,046,647

### Local Truckers Ask Separate Classification

Asserting that approximately one million motor trucks or a third of the national total are engaged in strictly local service and as "terminal units" serving all forms of transportation, the National Local Trucking Associations, Inc., is asking that these types of operations be given adequate consideration in the effort to solve the nation's transportation problems, according to a statement by the newly-formed association following a meeting of its executive committee on April 23. Simultaneously, the organization appealed to the Interstate Commerce Commission to classify local trucking service as "separate and distinct" from other types in the program to coordinate competing forms of transportation by highway, rail, air and water.

The "statement of policies," issued by Philip A. Smith, Jr., of Chicago, president of the National Local Trucking Associations, Inc., said in part:

"Local trucking service differs in many important respects from longer distance over-the-road highway carriers. And it is imperative that such operations be separated and distinctly classified.

"This service is an essential link in a complete transportation service, and the public interest requires that it impartially

and efficiently supplement in its restricted areas the service rendered by all mediums of transportation. This need is emphasized by the fact that local trucking service is not in competition with highway, rail, air and water carriers. Coordination of these competitive agencies is the objective of regulatory measures enacted by Congress.

"Modern pick-up and delivery service offered by local trucking service is a natural and necessary development of coordinated service. And sound transportation economy demands that individual enterprise be preserved against monopoly, and that charges made by all forms of transportation be adequate to sufficiently compensate all units engaged in providing the complete service."

### Senate Committee Considers Railroad Bills

The Senate committee on interstate commerce, after announcing a hearing to begin on May 6 on the Pettengill bill to repeal the long-and-short-haul clause of Section 4 of the interstate commerce act, has postponed the hearing to May 11. The bill was passed by the House on March 24 and its proponents have estimated that a majority of the Senators would favor the bill if brought before them by a committee report. Chairman Wheeler of the committee is very much opposed to the bill but instead of opposing it has assented to hearings, which are liable to delay consideration of the bill until a time close to the adjournment of Congress.

The committee has also ordered a favorable report on the through routes bill recommended by Co-ordinator Eastman, S. 1636, and has referred to a sub-committee the resolution proposed by Senator Benson, of Minnesota, proposing an investigation by a special Senate committee of the proposed sale of the Minneapolis & St. Louis, and two bills introduced by Senator Loneragan, of Connecticut, proposing the establishment of a National Safety Standards Commission and an amendment of Section 26 of the interstate commerce act.

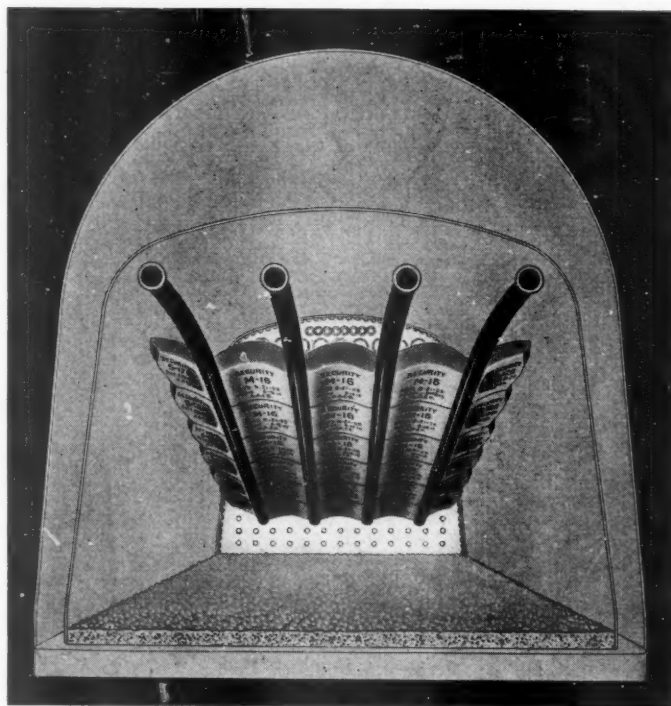
A sub-committee headed by Senator Loneragan has recommended favorable reports by the committee on four bills proposed by the railroad labor organizations, on which hearings were held during the last session of Congress, including the full-crew bill, the hours of service bill, and two bills to extend the jurisdiction of the Interstate Commerce Commission over train dispatching and maintenance of track and bridges.

Continuation through another Congress of the investigation of railroad financial history being conducted in the name of the committee under a Senate resolution of last year, but with an increased appropriation for expenses, was approved by the committee at a meeting on April 27. The committee ordered a favorable report on a resolution introduced by Chairman Wheeler providing for continuation of the investigation and an increase in the expense authorization from \$25,000 to \$100,000, but in place of his proposal that the investigation be continued in "succeeding Congresses," recommended a limitation to the life of the Seventy-fifth Congress. The investigation has been carried on with a force employed by the Senate committee,

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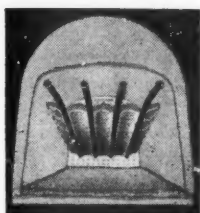
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but as it was authorized to call on government agencies for assistance it has been able to press into service a large proportion of the staff of the Interstate Commerce Commission's Bureau of Accounts, which has thus been required to divert much of its attention to past transactions rather than to a closer scrutiny of current reports. At one time it was planned to have hearings in connection with the investigation at this session, but they have been postponed, partly, it is understood, because of a dearth of material sufficiently new or exciting and partly in an effort not to detract from the publicity accorded other Senate investigations. The investigation was supposed to be limited to a list of 18 railroads selected by Co-ordinator Eastman, but it has been extended to the files, records and salaries of the Association of American Railroads by way of tracing contributions to the association by the individual roads.

While Congressional leaders are predicting an adjournment of Congress early in June, unless it is delayed by protracted debate in the Senate on the new revenue bill to tax the undistributed net income of corporations, very little progress has been made as to most of the bills as to which the railroads and other transportation interests have been most concerned. The Wheeler-Crosser bill, apparently intended to force the railroads into an agreement on a plan of dismissal compensation, has been given precedence over the other job-creating bills proposed by the railroad labor organizations, on which hearings were held last session, such as the six-hour day, full crew, and train-limit bills. There has been practically no consideration of most of the bills recommended by Co-ordinator Eastman. These include the waterway bill, the bill to reorganize the Interstate Commerce Commission and create a permanent co-ordinator, and dismissal compensation and unemployment insurance bills.

### St. Louis-Texas Service Speeded Up

The Missouri Pacific and the Missouri-Kansas-Texas, in conjunction with the St. Louis-San Francisco, on May 17 will speed up the schedules of the Sunshine Special of the Missouri Pacific and the Texas Special of the Katy-Frisco from St. Louis to Texas points. The first section of the Sunshine Special will leave St. Louis at 5:30 p.m. and will arrive at Dallas at 9:30 a.m., Fort Worth at 10:15 a.m., Houston at 12:20 p.m., San Antonio at 4:30 p.m. and Laredo at 9:05 p.m. Returning, it will leave Laredo at 4:00 a.m., San Antonio at 9:00 a.m. and Houston at 12:30 a.m. and will arrive in Dallas at 8:30 a.m. The second section of the Sunshine Special, a new train, will leave St. Louis at 6:30 p.m. and will be run by way of Dallas and El Paso to Los Angeles, where it will arrive at 7:30 a.m. the fourth day. The "Texan" of the Missouri Pacific will leave St. Louis at 1:40 p.m. as at present and will arrive in Dallas at 6:00 a.m. instead of 7:45 a.m., Fort Worth at 7:15 a.m. instead of 8:40 a.m., and Houston at 8:15 a.m. instead of 11:45 a.m. There will be no change in the north bound schedule.

The Texas Special of the St. Louis-San

Francisco and the M-K-T will leave St. Louis at 5:30 p.m. instead of 6:30 p.m. and will arrive at Dallas at 9:30 a.m. instead of 12:15 p.m., Fort Worth at 9:30 a.m. instead of 12:30 p.m., San Antonio at 4:30 p.m. instead of 7:50 p.m., and Laredo at 9:05 p.m. instead of 2:00 a.m. A new train will leave St. Louis at 6:30 p.m. and will be run on the present schedule of the Texas Special, arriving at Dallas at 12:15 p.m., Fort Worth at 12:30 p.m., and San Antonio at 9:30 p.m. At Muskogee, it will connect with the Texas Special which leaves Kansas City at 10:10 p.m. over the Katy.

## Meetings & Conventions

*The following list gives names of secretaries, date of next or regular meetings, and places of meetings:*

- AIR BRAKE ASSOCIATION.**—T. L. Burton, Room 3400, Empire State Bldg., New York, N. Y. Annual meeting, September 15-16, 1936, Hotel Sherman, Chicago, Ill.
- ALLIED RAILWAY SUPPLY ASSOCIATION.**—F. W. Venton, Crane Company, 836 S. Michigan Ave., Chicago, Ill. To meet with Air Brake Association, Car Department Officers' Association, International Railway Master Blacksmith's Association, International Railway Fuel Association, International Railway General Foremen's Association, Master Boiler Makers' Association and the Traveling Engineers' Association.
- AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.**—W. R. Curtis, F. T. R., M. & O. R. R., Chicago, Ill.
- AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.**—E. L. Duncan, 816 McCormick Bldg., Chicago, Ill. Annual meeting, October 27-29, 1936, New Orleans, La.
- AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.**—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York, N. Y.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.**—F. O. Whiteman, Union Station, St. Louis, Mo. Annual meeting, June 16-18, 1936, Hotel Stevens, Chicago, Ill.
- AMERICAN ASSOCIATION OF RAILWAY ADVERTISING AGENTS.**—E. A. Abbott, Poole Bros., Inc., 85 W. Harrison St., Chicago, Ill.
- AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.**—F. R. Borger, C. I. & L. Ry., 836 S. Federal St., Chicago, Ill. Annual meeting, October 5-8, 1936, Toronto, Ontario.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.**—C. A. Lichty, 319 N. Waller Ave., Chicago, Ill. Annual meeting, October 20-22, 1936, Hotel Stevens, Chicago, Ill. Exhibit by Bridge and Building Supply Men's Association.
- AMERICAN RAILWAY CAR INSTITUTE.**—W. C. Tabbert, 19 Rector St., New York, N. Y.
- AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.**—R. G. Buford, Asst. Mgr., Industrial Development Dept., M-K-T R. R., Dallas, Tex.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.**—Works in co-operation with the Association of American Railroads, Division IV.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill.
- AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.**—M. Fenaja, Missouri Pacific Lines Magazine, Missouri Pacific Lines Bldg., St. Louis, Mo.
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.**—G. G. Macina, C. M., St. P. & P. R. R., 11402 Calumet Ave., Chicago, Ill. Annual meeting, September 17-18, 1936, Hotel Sherman, Chicago, Ill.
- AMERICAN SHORT LINE RAILROAD ASSOCIATION.**—R. E. Schindler, Union Trust Bldg., Washington, D. C.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.**—C. E. Davies, 29 W. 39th St., New York N. Y.
- Railroad Division.**—Marion B. Richardson, 192 E. Cedar St., Livingston, N. J.
- AMERICAN TRANSIT ASSOCIATION.**—Guy C. Heckler, 292 Madison Ave., New York, N. Y. Annual meeting, September 21-24, 1936, The Greenbrier Hotel, White Sulphur Springs, W. Va.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.**—H. L. Dawson, 1427 Eye St., N. W., Washington, D. C. Annual meeting, 1937, New Orleans, La.
- ASSOCIATION OF AMERICAN RAILROADS.**—H. J. Forster, Transportation Bldg., Washington, D. C.
- Operations and Maintenance Department.**—J. M. Symes, Vice-President, Transportation Bldg., Washington, D. C.
- Division I.—Operating.**—J. C. Caviston, 30 Vesey St., New York, N. Y.

- Freight Station Section.**—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.
- Medical and Surgical Section.**—J. C. Caviston, 30 Vesey St., New York, N. Y. Annual meeting, May 11-12, 1936, Hotel Stevens, Chicago, Ill.
- Protective Section.**—J. C. Caviston, 30 Vesey St., New York, N. Y. Annual meeting, May 20-21, 1936, Hotel Statler, St. Louis, Mo.
- Safety Section.**—J. C. Caviston, 30 Vesey St., New York, N. Y. Next meeting, June 23-25, 1936, Hotel Stevens, Chicago, Ill.
- Telegraph and Telephone Section.**—W. A. Fairbanks, 30 Vesey St., New York, N. Y. Next meeting, October 6-8, 1936, Mayflower Hotel, Washington, D. C.
- Division II.—Transportation.**—L. R. Knott, 59 E. Van Buren St., Chicago, Ill. Annual meeting, May 21-22, 1936, Hotel Stevens, Chicago, Ill.
- Division IV.—Engineering.**—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill.
- Construction and Maintenance Section.**—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill.
- Electrical Section.**—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill.
- Signal Section.**—R. H. C. Balliet, 30 Vesey St., New York, N. Y.
- Division V.—Mechanical.**—V. R. Hawthorne, 59 E. Van Buren St., Chicago, Ill. Annual meeting, June 25-26, 1936, Chicago, Ill.
- Division VI.—Purchases and Stores.**—W. J. Farrell, 30 Vesey St., New York, N. Y.
- Division VII.—Freight Claims.**—Lewis Pilcher, 59 E. Van Buren St., Chicago, Ill. Annual meeting, June 2-4, 1936, Hotel Sherman, Chicago, Ill.
- Division VIII.—Motor Transport.**—George M. Campbell, Transportation Bldg., Washington, D. C.
- Car Service Division.**—C. A. Buch, Transportation Bldg., Washington, D. C.
- Traffic Department.**—A. F. Cleveland, Vice-President, Transportation Bldg., Washington, D. C.
- Finance, Accounting, Taxation and Valuation Department.**—E. H. Bunnell, Vice-President, Transportation Bldg., Washington, D. C.
- Accounting Division.**—E. R. Ford, Transportation Bldg., Washington, D. C. Annual meeting, June 30-July 2, 1936, Book-Cadillac Hotel, Detroit, Mich.
- Treasury Division.**—E. R. Ford, Transportation Bldg., Washington, D. C.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.**—F. L. Johnson, Chief Clerk and Claim Agent, General Claims Dept., Alton R. R., 340 W. Harrison St., Chicago, Ill. Annual meeting, June 17-19, 1936, Hotel St. Paul, St. Paul, Minn.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.**—Jos. A. Andreuccetti, C. & N. W. Ry., 1519 Daily News Bldg., 400 W. Madison St., Chicago, Ill.
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.**—W. S. Carlisle, National Lead Company, 900 W. 18th St., Chicago, Ill. Meets with American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.**—C. R. Crook, 2271 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, second Monday of each month, except June, July and August, Windsor Hotel, Montreal, Que.
- CAR DEPARTMENT OFFICERS' ASSOCIATION.**—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 S. Morgan St., Chicago, Ill. Annual meeting, September 15-16, 1936, Hotel Sherman, Chicago, Ill.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.**—G. K. Oliver, 2514 W. 55th St., Chicago, Ill. Regular meetings, second Monday of each month, except June, July and August, La Salle Hotel, Chicago, Ill.
- CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.**—J. W. Krause, Room 299, 610 S. Main St., Los Angeles, Cal. Club not active at present.
- CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, Mo.**—E. G. Bishop, Illinois Central System, East St. Louis, Ill. Regular meetings, third Tuesday of each month, except June, July and August, Hotel Statler, St. Louis, Mo.
- CENTRAL RAILWAY CLUB OF BUFFALO.**—Mrs. M. D. Reed, 1817 Hotel Statler, McKinley Square, Buffalo, N. Y. Regular meetings, second Thursday of each month, except June, July and August, Hotel Statler, Buffalo, N. Y.
- CINCINNATI RAILWAY CLUB.**—D. R. Boyd, 2920 Utopia Place, Hyde Park, Cincinnati, Ohio. Operation suspended indefinitely.
- CLEVELAND RAILWAY CLUB.**—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings temporarily suspended.
- INTERNATIONAL RAILWAY FUEL ASSOCIATION.**—T. D. Smith, 1660 Old Colony Bldg., Chi-

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# THE SUPERHEATER COMPANY

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## GENUINE

## ELESKO PARTS

## CARRY THE TRADEMARK



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REPRESENTATIVE OF AMERICAN THROTTLE COMPANY, INC.



cago, Ill. Annual meeting, September 17-18, 1936, Hotel Sherman, Chicago, Ill.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St., Winona, Minn. Annual meeting, September 15-16, 1936, Hotel Sherman, Chicago, Ill.

INTERNATIONAL RAILWAY MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Annual meeting, September 17-18, 1936, Hotel Sherman, Chicago, Ill.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y. Annual meeting, September 17-18, 1936, Hotel Sherman, Chicago, Ill.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—Clyde S. Bailey, 810 18th St., N. W., Washington, D. C. Annual meeting, November 10-13, 1936, Atlantic City, N. J.

NATIONAL RAILWAY APPLIANCE ASSOCIATION.—C. H. White (Pres. and Sec'y), Room 1826, 208 S. La Salle St., Chicago, Ill.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, second Tuesday of each month, except June, July, August and September, Copley Plaza, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. W. Pye, 30 Church St., New York, N. Y. Regular meetings, third Friday of each month, except June, July and August, 29 W. 39th St., New York, N. Y.

PACIFIC RAILWAY CLUB.—William S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings, second Thursday of each month, alternately at San Francisco and Oakland, excepting June at Los Angeles and October at Sacramento.

RAILWAY BUSINESS ASSOCIATION.—P. H. Middleton (Treas. and Asst. Sec'y), First National Bank Bldg., Chicago, Ill.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Regular meetings, fourth Thursday of each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. McC. Price, Allen-Bradley Company, 600 W. Jackson Blvd., Chicago, Ill. Meets with Association of Railway Electrical Engineers.

RAILWAY FIRE PROTECTION ASSOCIATION.—P. A. Bissell, 40 Broad St., Boston, Mass. Annual meeting, October 13-14, 1936.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, Purchases and Stores Division, and Motor Transport Division, Association of American Railroads.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with Telegraph and Telephone Section of A. A. R., Division I.

RAILWAY TIE ASSOCIATION.—I. C. Rowe, 2091 Railway Exchange Bldg., St. Louis, Mo. Annual meeting, May 20-22, 1936, Netherland Plaza Hotel, Cincinnati, Ohio.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—Merged with Association of American Railroads.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Annual meeting, September 15-17, 1936, Hotel Stevens, Chicago, Ill.

SIGNAL APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with A. A. R., Signal Section.

SOCIETY OF OFFICERS, UNITED ASSOCIATIONS OF RAILROAD VEHICLE MEN.—M. W. Jones, Baltimore & Ohio, Mt. Royal Station, Baltimore, Md. Annual meeting, October, 1936, Detroit, Mich.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, 4 Hunter St., S. E., Atlanta, Ga. Regular meetings, third Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta, Ga.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & C. R. R., Atlanta, Ga.

TOOL FOREMEN SUPPLIERS' ASSOCIATION.—E. E. Caswell, Union Twist Drill Co., 11 S. Clinton St., Chicago, Ill. Meets with American Railway Tool Foremen's Association.

TORONTO RAILWAY CLUB.—R. H. Burgess, P. O. Box 8, Terminal "A," Toronto, Ont. Regular meetings, fourth Monday of each month, except June, July and August, Royal York Hotel, Toronto, Ont.

TRACK SUPPLY ASSOCIATION.—D. J. Higgins, Gardner-Denver Company, 332 S. Michigan Ave., Chicago, Ill. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—D. Meadows (Treasurer), 58 Roseberry Place, St. Thomas, Ontario. Annual meeting, September 15-16, 1936, Hotel Sherman, Chicago, Ill.

WESTERN RAILWAY CLUB.—C. L. Emerson, C. M. St. P. & P., Chicago, Ill. Regular meetings, third Monday of each month, except June, July, August and September, Hotel Sherman, Chicago, Ill.

## Equipment and Supplies

### LOCOMOTIVES

THE ALTON & SOUTHERN, reported in the *Railway Age* of March 28, as inquiring for one 2-8-2 type locomotive, has ordered this equipment from the Baldwin Locomotive Works.

### FREIGHT CARS

THE CHICAGO & NORTH WESTERN has ordered 18 steel underframes for 50-ton automobile box cars from the American Car & Foundry Company.

THE PERE MARQUETTE is inquiring for 400 automobile box cars, 40 ft. 6 in. long, of 40 or 50 tons' capacity, and 100 automobile box cars, 50 ft. 6 in. long, of 50 tons' capacity.

THE CHESAPEAKE & OHIO is inquiring for 5,400 freight cars as follows:

Number	Tons Capacity	Types
3,500	50	steel self-clearing hopper
500	50	flat-bottom gondola
1,000	50	40 ft. 6 in. steel frame, steel sheathed box
150	50	drop end gondola with steel floors
100	50	drop end gondola with wood floors
150	40 or 50	40 ft. 6 in. automobile box

### PASSENGER CARS

THE CHICAGO, ROCK ISLAND & PACIFIC has given an order for converting and modernizing four buffet baggage cars to the American Car & Foundry Company.

### IRON AND STEEL

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has ordered 3,425 tons of rails from the Tennessee Coal, Iron & Railroad Company.

THE SEABOARD AIR LINE has ordered from the Bethlehem Steel Company 3,560 tons of 100-lb. R.E. rail, to be rolled at Sparrows Point, Md.; this is in addition to the 5,000 tons ordered from the Tennessee Coal, Iron & Railroad Company and reported in the *Railway Age* of April 25.

## Construction

ATCHISON, TOPEKA & SANTA FE.—The general contract for the construction of this company's new line between Boise City, Okla., and Las Animas, Colo., 111.26 miles, has been awarded to the Sharpe & Fellows Company, Los Angeles, Cal. This line will be constructed of 90-lb. No. 1 second-hand rail, of which 17,000 tons will be required, treated pine ties and ballast of native materials. Grading quantities will include 3,000,000 cu. yd. of embankment, 760,000 cu. yd. of common excava-

tion, 109,000 cu. yd. of loose rock excavation and 400,000 cu. yd. of solid rock excavation. The largest bridge will be that over the Cimarron river, which will consist of five 106-ft. deck girder spans on concrete piers. The contract also includes the construction of 5,000 lin. ft. of pile trestles, 3 water stations, 4 section layouts and 1 depot. About 4,000 cu. yd. of concrete will be required.

NEW YORK CENTRAL.—The New York Public Service Commission has approved plans and an estimate of cost of \$390,400 for the elimination of the Blossom road crossing of this road in Rochester, N. Y. The commission authorized the railroad company to do certain of the work by direct employment of labor and purchase of materials for \$76,700.

The commission has approved low bids covering the elimination of the Hinchey crossing of the New York Central at Howard road in the town of Gates, N. Y. See *Railway Age* of January 18, page 161.

STATEN ISLAND RAPID TRANSIT.—This Baltimore & Ohio subsidiary is asking for bids on May 4 for the construction of passenger facilities at Stapleton, Staten Island, N. Y., to cost about \$32,500.

WABASH.—This company expects to receive bids on May 6 for the ballast for the approaches to the bridge which it has under construction across the Missouri river at St. Charles, Mo.

## Supply Trade

### Changes in Moss Tie Company

E. E. Pershall, president of the T. J. Moss Tie Company, St. Louis, Mo., has been elected chairman of the board of directors. John S. Penney, vice-president of this company, has been elected president to succeed Mr. Pershall. R. M. Hamilton, vice-president of D. B. Frampton & Com-



E. E. Pershall

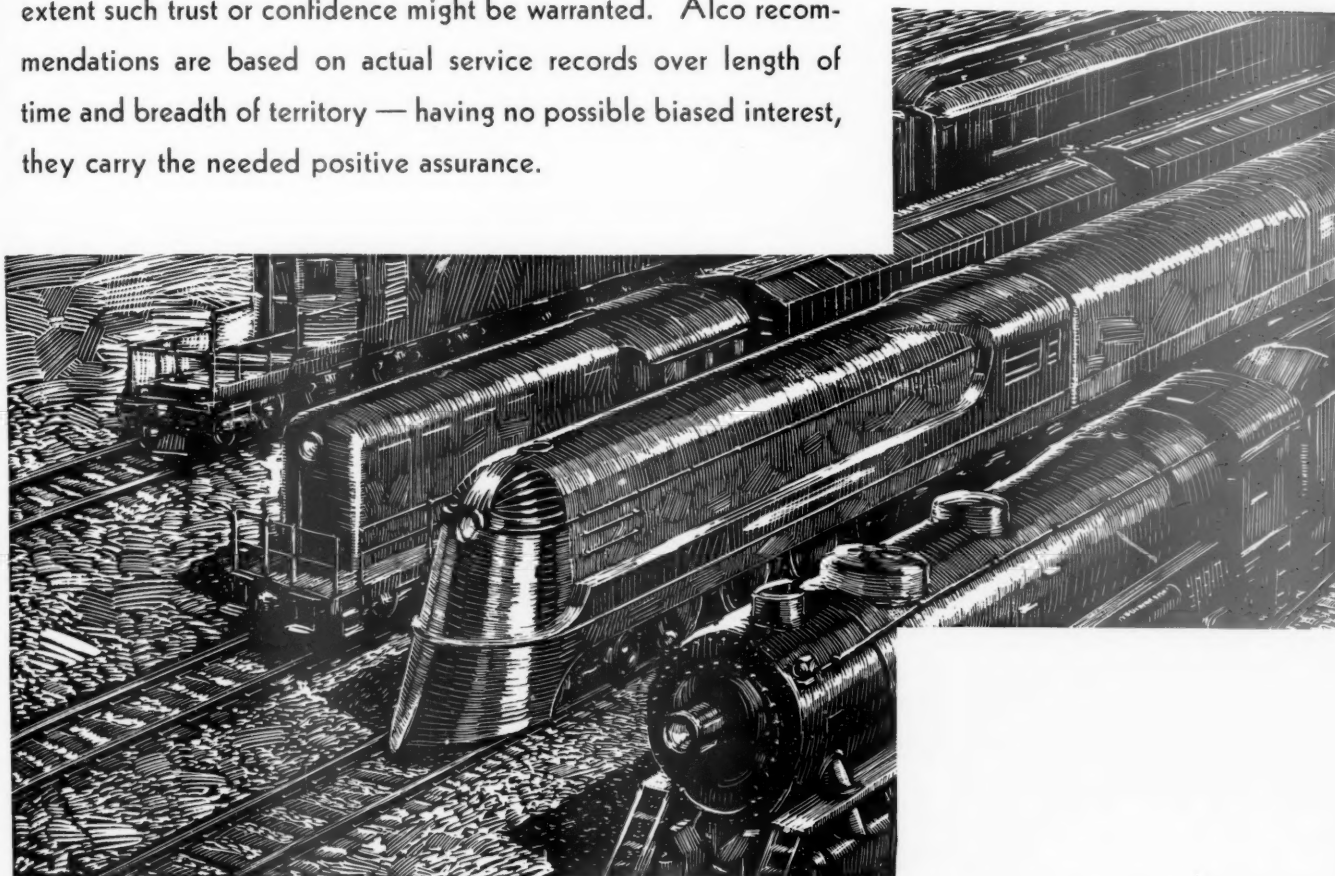
pany, Pittsburgh, Pa., and Meyer Levy, superintendent of production of the T. J. Moss Tie Company, have been elected vice-presidents of the latter company.

Mr. Pershall was born in East St. Louis in 1888 and graduated from the University

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# ASSURANCE

THE three different power units — steam, electric and Diesel-electric — are rapidly finding the particular phase of economical railroading for which each is peculiarly adapted . . . Alco builds all three types. And Alco units of all three types have long service records. . . Alco recommendations, therefore, do not depend on any trust or confidence in the builder, regardless of the extent such trust or confidence might be warranted. Alco recommendations are based on actual service records over length of time and breadth of territory — having no possible biased interest, they carry the needed positive assurance.



AMERICAN LOCOMOTIVE COMPANY

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of Illinois in 1910, after majoring in chemical engineering. Upon graduation he entered the employ of the Kettle River Company, at Madison, Ill., with which company he continued until 1918, when he resigned as superintendent to become assistant to the president of the T. J. Moss Tie Company at St. Louis. In 1919 he was elected vice-president, and in 1928 president of that company, which latter position he has held until his recent election. During his connection with the company Mr. Pershall has been active in the management of all phases of the company's operations. Mr. Pershall has long been active in co-operative work in the tie industry, being one of the organizers of the National Association of Railroad Tie Producers, now the Railway Tie Association, in 1919, and serving as its president in 1931.

Mr. Penney was born in St. Louis, Mo., in 1890, and graduated from Westminster College, Fulton, Mo., in 1911, of which



John S. Penney

institution he is now chairman of the executive committee of its Board of Trustees. He became connected with the Kettle River Company upon graduation and resigned in 1918 to construct and operate the wood preserving plant of the Central Creosoting Company at Finney, Ohio. In 1920 he entered the employ of the T. J. Moss Tie Company as general superintendent of timber treating plants and supervised the construction of its wood preserving plants at East St. Louis, Ill., and Granville, Wis. Later he directed the construction of plants at Bossier City, La., and Columbus, Miss. He was elected vice-president of the T. J. Moss Tie Company in 1928, which position he held until his recent promotion. He has long been prominently identified with the activities of the American Wood Preservers Association, and served as its president in 1931.

Mr. Hamilton graduated from Westminster College at Fulton, Mo., in 1912, and after several years' experience in the steel industry, and two years in the army as first lieutenant of artillery during the war, entered the employ of the T. J. Moss Tie Company in 1920. He served in various capacities until 1930 when he resigned to become vice-president of D. B. Frampton & Company, Pittsburgh, which position he has held until he resigned to become a vice-president of the T. J. Moss Tie Company.

## Financial

**ANN ARBOR.—Annual Report.**—The 1935 annual report of this company shows net income, after interest and other charges, of \$54,001, as compared with net deficit of \$52,287 in 1934. Selected items from the Income Account follow:

	1935	1934	Increase or decrease
RAILWAY OPERATING REVENUES	\$3,959,274	\$3,307,260	+\$652,013
Maintenance of way	328,456	291,151	+37,304
Maintenance of equipment	839,577	583,171	+256,406
Transportation	1,595,897	1,416,137	+179,759
TOTAL OPERATING EXPENSES	3,060,301	2,574,839	+485,462
Operating ratio	77.29	77.85	-.56
NET REVENUE FROM OPERATIONS	898,972	732,420	+166,551
Railway tax accruals	169,829	131,555	+38,273
Railway operating income	727,319	600,810	+126,508
Equipment rents and joint facility rents	244,761	226,151	+18,610
NET RAILWAY OPERATING INCOME	482,558	374,659	+107,898
Non-operating income	14,013	18,648	-4,636
GROSS INCOME	496,571	393,308	+103,262
Interest on funded debt	410,031	413,193	-3,162
TOTAL DEDUCTIONS FROM GROSS INCOME	442,569	445,596	-3,026
NET INCOME	\$54,001	\$52,287*	+\$106,289

\* Deficit.

**CHESAPEAKE & OHIO.—Bonds.**—This company has applied to the Interstate Commerce Commission for authority to issue \$40,362,000 of 3½ per cent refunding and improvement mortgage bonds, Series D, for the purpose of refunding on July 1 a like amount of 4½ per cent bonds.

**Bonds Offered.**—Morgan, Stanley & Co., Kuhn, Loeb & Co. and Edward B. Smith & Co. have offered, subject to the approval of the Interstate Commerce Commission, \$40,362,000 of refunding and improvement mortgage 3½ Series D bonds of this company, due 1996. The issue, which will have a sinking fund, is priced at 99½.

**CHICAGO, BURLINGTON & QUINCY.—Equipment Trust Certificates.**—This road has applied to the Interstate Commerce Commission for authority to issue \$3,950,000 of equipment trust certificates in connection with the acquisition of equipment to cost \$5,279,000, including four streamlined trains, three locomotives, 250 hopper cars and 500 box cars.

**ERIE.—R. F. C. Loan.**—This company has applied to the Reconstruction Finance Corporation for a three-year extension of its loan amounting to \$2,775,000 maturing May 1.

**GULF, MOBILE & NORTHERN.—Bonds.**—The Interstate Commerce Commission has authorized this company to pledge \$888,000 of its first mortgage 5 per cent Series C bonds with the trustee under its trust indenture of December 15, 1935, in substi-

tution of a like amount of first mortgage Series A bonds of the New Orleans Great Northern.

**ILLINOIS CENTRAL.—R.F.C. Loan.**—The Interstate Commerce Commission has authorized this company to borrow an additional \$7,449,667 from the Reconstruction Finance Corporation to be applied toward meeting a maturity of \$8,000,000 of 6½ per cent collateral trust bonds due July 1. The time of payment of an R.F.C. loan of \$2,483,333 which matures May 11 has been extended to May 31, 1937.

**INDIANAPOLIS UNION.—Bonds.**—The Interstate Commerce Commission has authorized this company to issue \$4,714,000 of 3½ per cent series B bonds, maturing in 1986. The issue has been authorized for sale to Hallgarten & Co., the highest bidder, at 102.33, which will make the annual cost of the money 3.401 per cent. The proceeds will be used to redeem outstanding 4½ and 5 per cent issues which have been called for redemption. The issue is guaranteed by the Pennsylvania and the New York Central.

**MINNEAPOLIS & ST. LOUIS.—Abandonment.**—The Interstate Commerce Commission has authorized the co-receivers of this company to abandon a branch line extending from G. & M. Junction to Montezuma, Iowa, 13.6 miles.

**MOBILE & OHIO.—Annual Report.**—The 1935 annual report for this road shows net deficit, after interest and other charges, of \$1,583,766, as compared with net deficit of \$1,704,221 in 1934. Selected items from the Income Statement follow:

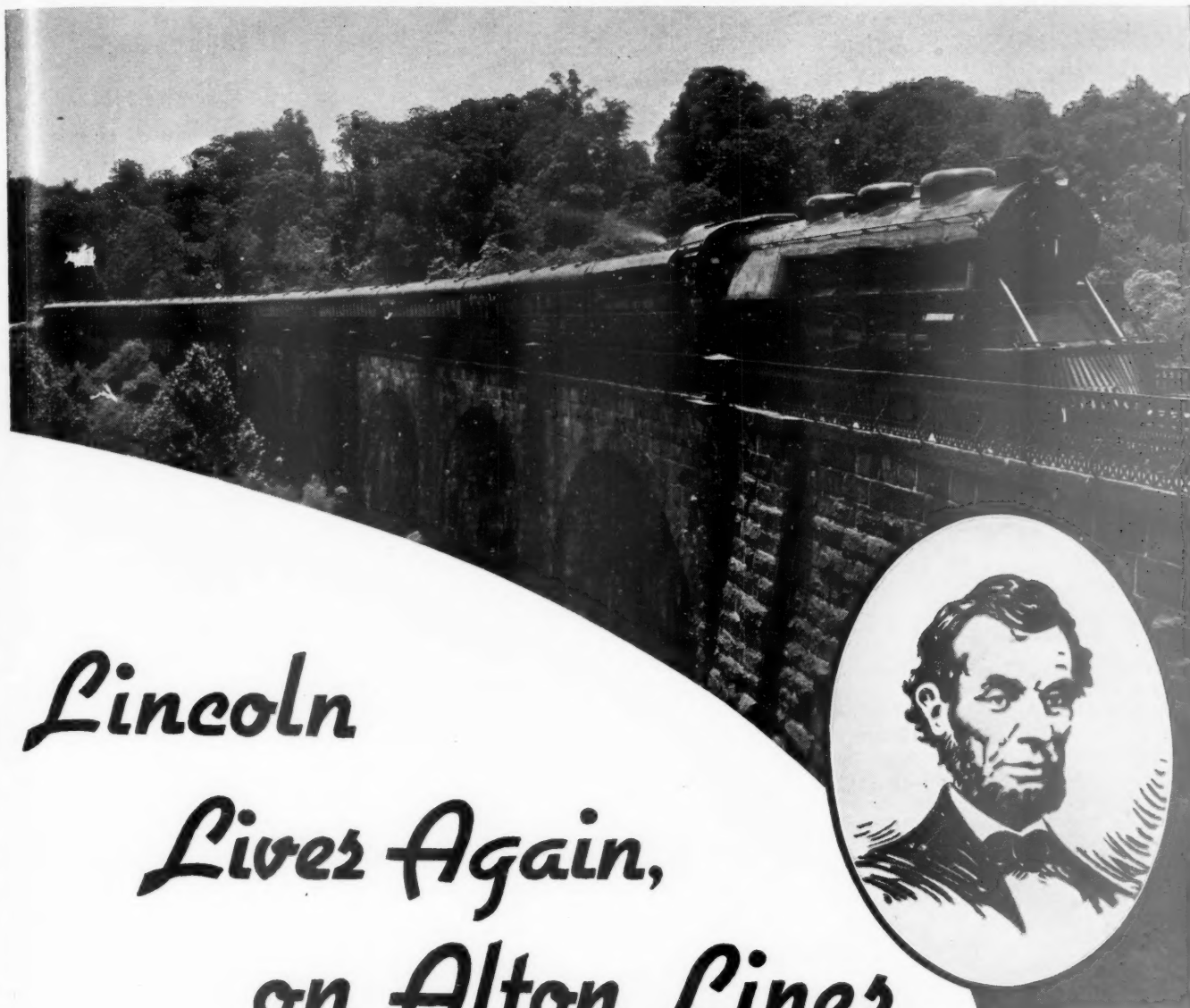
	1935*	1934*	Increase or Decrease
RAILWAY OPERATING REVENUES	\$8,853,751	\$8,544,827	+\$308,924
Maintenance of way	1,379,759	1,213,736	+166,022
Maintenance of equipment	1,971,499	2,028,755	-57,255
Transportation	3,495,257	3,209,566	+285,690
TOTAL OPERATING EXPENSES	7,730,359	7,434,092	+296,266
Operating ratio	87.31	87.00	+31
NET REVENUE FROM OPERATIONS	1,123,392	1,110,734	+12,657
Railway tax accruals	369,459	336,430	+33,029
Hire of equipment	302,348	419,317	-116,969
Joint facility rents	376,408	379,461	-3,053
OPERATING INCOME	72,131	30,048	+102,179
Non-operating income	15,477	58,119	-7,358
NET INCOME	137,608	28,071	+109,537
Rent for leased roads	1,418	927	+491
TOTAL DEDUCTIONS FROM GROSS INCOME	1,721,375	1,732,292	-10,917
DEFICIT AFTER CHARGES	\$1,583,766	\$1,704,221	-\$120,455

\* Combined Corporate and Receivers' Accounts. Statistics for 1934 have been restated for comparable purposes.

**NEW YORK, NEW HAVEN & HARTFORD.—Old Colony Rent.**—The federal court at New Haven has advised the trustees of this company to withhold quarterly rental payments to the Old Colony R.R. until further order of the court.

**MISSOURI PACIFIC.—Reorganization.**—The hearing on the plan of reorganization

Continued on next left-hand page



# *Lincoln Lives Again, on Alton Lines*

Alluring lines and quiet comfort characterize the Alton Lines' new "Abraham Lincoln" . . . Its sleek form skims smoothly over strands of steel, while within repose its passengers amid de luxe appointments . . . In winter they are cozy and comfortable; in summer cool and calm . . . In all seasons, transportation is made **SAFE** by Westinghouse Air Brakes!

*It is altogether fitting that this train, which efficiently serves the territory where he lived and which he served so ably, should bear the name of our noble President.*



## **WESTINGHOUSE AIR BRAKE CO.**

*General Office and Works:*  
**WILMERDING, PENNA.**



for this company, before Director Sweet of the Bureau of Finance of the Interstate Commerce Commission, was adjourned on April 24 to June 23, to allow time for preparation for cross-examination of witnesses who had appeared in opposition to the debtor's plan, and after a new plan had been submitted by W. L. Kitchel, counsel for the protective committee representing the first and refunding mortgage bondholders. This plan would put the new company in control of three voting trustees, would reduce the capitalization of the present system from \$800,748,725 to \$552,114,500 (counting the no-par stock at \$100 a share) and would reduce the fixed charges from \$24,790,711 to \$7,120,615. It would provide for the present stockholders only to the extent that they would receive warrants for the purchase of new stock for cash. Provision is proposed for the inclusion of about 30 companies in the new system by consolidation but not for the actual consolidation of the Texas & Pacific. The new securities would be \$176,352,500 of fixed interest debt, \$178,311,000 of contingent interest debt, \$87,514,000 of preferred stock, and 1,099,370 shares of common stock.

**PENNSYLVANIA.—Equipment Trust Certificates.**—The Reconstruction Finance Corporation on April 23 received three bids on \$17,460,000 of this company's 4 per cent equipment trust certificates ranging from \$1,051.77 per thousand dollars to \$1,072.02447. The highest bid was submitted by Salomon Bros. & Hutzler, New York, representing a premium of \$1,257,547.

**RICHMOND, FREDERICKSBURG & POTOMAC.—Annual Report.**—The 1935 annual report of this company shows net income, after interest and other charges, of \$244,806, a decrease of \$79,465 as compared with net income in 1934. Selected items from the Income Statement follow:

	1935	Increase or Decrease Compared with 1934
RAILWAY OPERATING REVENUES	\$6,507,585	+\$378,885
Maintenance of way	694,934	+64,834
Maintenance of equipment	1,468,972	+102,355
Transportation	2,683,415	+279,986
TOTAL OPERATING EXPENSES	5,407,515	+395,147
Operating ratio	83.10	+1.31
NET REVENUE FROM OPERATIONS	1,100,070	-16,262
Railway tax accruals	308,453	+17,116
Railway operating income	791,445	-33,429
Hire of equipment—Dr.	340,847	+25,566
Joint facility rents—Dr.	74,741	+9,133
NET RAILWAY OPERATING INCOME	375,856	-68,129
Non-operating income	194,982	-16,420
GROSS INCOME	570,838	-84,550
Interest on funded debt	311,369	-5,622
TOTAL DEDUCTIONS FROM GROSS INCOME	326,032	-5,085
NET INCOME	\$244,806	-\$79,465

**READING.—Philadelphia Ferry Abandonment.**—The Interstate Commerce Commission has authorized the Delaware River Ferry Company, a subsidiary of this railroad, to abandon operation, insofar as railway connections are concerned, of ferry service between Chestnut street, Philadelphia, Pa., at Kaighn's Point, Camden, N.

J., 1.6 miles, and between the latter point and South street, Philadelphia, 1.2 miles.

**READING.—Abandonment.**—This company has applied to the Interstate Commerce Commission for authority to abandon 4.36 miles of its Tamaqua, Hazleton & Northern branch in Pennsylvania.

**UNION PACIFIC.—Bonds.**—Division 4 of the Interstate Commerce Commission has authorized this company to issue \$26,835,000 of 35-year 3½ per cent debenture bonds, to be sold at 97 and interest, the proceeds to be used to redeem outstanding bonds.

**WABASH.—Interest Payment.**—The district court at St. Louis has authorized receivers for the Wabash to pay \$847,275 semi-annual interest due May 1 on first mortgage bonds.

**WABASH.—Annual Report.**—The 1935 annual report of this company shows net deficit, after interest and other charges, of \$2,268,468, as compared with net deficit of \$3,107,620 in 1934. Selected items from the Income Account follow:

	1935*	1934*	Increase or decrease
Average Mileage Operated	2,447.01	2,455.06	-8.05
RAILWAY OPERATING REVENUES	\$41,492,889	\$38,235,813	+\$3,257,076
Maintenance of way	4,823,317	4,621,032	+202,285
Maintenance of equipment	7,060,146	5,978,723	+1,081,423
Transportation	15,832,458	14,492,651	+1,339,806
TOTAL OPERATING EXPENSES	31,246,552	28,523,481	+2,723,071
Operating ratio			
NET REVENUE FROM OPERATIONS	10,246,337	9,712,332	+534,005
Railway tax accruals	1,511,319	1,325,927	+6,867
Railway operating income	8,720,187	8,378,441	+341,746
Equipment and joint facility rents—Net	3,506,287	4,023,168	-516,880
NET RAILWAY OPERATING INCOME	5,213,899	4,355,272	+858,626
Non-operating income	381,258	369,232	+12,026
GROSS INCOME	5,595,158	4,724,505	+870,653
Rent for leased roads	355,098	356,924	-1,826
Interest on funded debt	6,962,538	6,968,667	-6,129
TOTAL DEDUCTIONS FROM GROSS INCOME	7,863,626	7,832,125	+31,500
NET INCOME (Deficit)	\$2,268,468	\$3,107,620	+839,152

\* Combined Corporate and Receivers' Accounts.

#### Average Prices of Stocks and of Bonds

	Apr. 28	Last week	Last year
Average price of 20 representative railway stocks...	44.46	46.85	31.21
Average price of 20 representative railway bonds...	78.56	79.68	72.45

#### Dividends Declared

Bangor & Aroostook.—Common, 62c; Preferred, 1¼ per cent, both payable July 1 to holders of record May 29.  
 North Pennsylvania.—\$1.00, quarterly, payable May 25 to holders of record May 16.  
 Reading.—1st Preferred, 50c, quarterly, payable June 11 to holders of record May 21.

## Railway Officers

### EXECUTIVE

Effective May 1 the jurisdiction of **W. M. Jeffers**, executive vice president of the Union Pacific, has been extended over the freight and passenger traffic departments, this being a further extension of the jurisdiction of the executive vice-president contemplated when the position was created in 1932.

**F. G. Gurley**, assistant to executive vice-president of the Chicago, Burlington & Quincy, has been appointed to the newly-created position of assistant vice-president of operation, with headquarters as before at Chicago. **H. C. Murphy**, superintendent safety, has been promoted to assistant to executive vice-president, succeeding Mr. Gurley.

### FINANCIAL, LEGAL AND ACCOUNTING

**B. B. Rankin**, assistant general auditor of the Pittsburgh & Lake Erie, with headquarters at Pittsburgh, Pa., has been appointed general auditor, with the same headquarters, succeeding **A. P. Bixler**, deceased.

### OPERATING

**J. D. Farrington**, general manager of the Fort Worth & Denver City and the Wichita Valley, with headquarters at Fort Worth, Texas, has been appointed chief operating officer of the Chicago, Rock Island & Pacific, with headquarters at Chicago, effective May 15, succeeding **L. C. Fritch**, who is retiring.

**E. V. Johnson**, trainmaster on the Green Bay & Western, with headquarters at Green Bay, Wis., has been promoted to superintendent, with the same headquarters. Mr. Johnson was born on July 2, 1894, at Chetopa, Kan., and attended Harshaw Academy at Denison, Tex. He entered railway service in May, 1906, as a messenger on the Missouri-Kansas-Texas at Denison, Tex., later serving successively as operator, yardmaster, dispatcher, chief dispatcher and trainmaster. Recently Mr. Johnson left the Katy to go with the Green Bay & Western as trainmaster, which position he held until his recent promotion.

**C. D. Peckenpugh**, general superintendent of the eastern district of the Chicago, Burlington & Quincy, with headquarters at Galesburg, Ill., has been promoted to general manager of the Fort Worth & Denver City and the Wichita Valley, subsidiaries of the Burlington System, with headquarters at Fort Worth, Texas, effective May 1. He succeeds **J. D. Farrington**, who has resigned to accept service with another company. **G. L. Griggs**, superintendent of the Galesburg and Beardstown divisions of the Burling-

Continued on next left-hand page



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reduce maintenance caused by settling and breaking.

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Vanadium Corporation of America,  
are used by steel makers in the  
production of high-quality steels.

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ton at Galesburg, has been promoted to general superintendent of the eastern district, succeeding Mr. Peckenpaugh. **W. E. Haist**, assistant to general manager at Chicago, has been appointed superintendent of the Galesburg and Beardstown divisions, succeeding Mr. Griggs.

**Elmer J. Stubbs**, who has been appointed superintendent of transportation of the Erie with headquarters at Cleveland, Ohio, as noted in the *Railway Age* of April 25, was born on February 16, 1890, at Lewisburg, Ohio. After studying a year at Ohio Wesleyan, a year at Ohio State university and 1½ years at the Ohio State medical school, Mr. Stubbs entered the service of the Erie on May 19, 1913, as a station clerk on the New York division. In October of the same year he was transferred to the office of the general passenger agent and from October, 1915,



Elmer J. Stubbs

to July, 1919, he served as a ticket agent, rate clerk, freight agent and relief agent on the Meadville division. After serving for a short time as secretary of the agents association, Mr. Stubbs was appointed a freight agent at Akron, Ohio, being transferred to New York in 1928. In September, 1929, he was advanced to assistant superintendent of terminals at Jersey City, N. J. In June, 1933, he was appointed chief clerk to the superintendent of transportation at Cleveland, which position he was holding at the time of his recent appointment as superintendent of transportation, effective April 16.

## TRAFFIC

**C. H. Stewart**, traveling agent on the Minneapolis & St. Louis, has been promoted to general agent, with headquarters at Duluth, Minn., succeeding **F. L. Hansen**, who has retired because of ill health.

**Thomas P. Casey** has been appointed general agent for the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at New York, to succeed **A. H. Murphy**, who has resigned. Mr. Casey was formerly with the Milwaukee as a general agent but left the company in 1935 to engage in private business at Buffalo, N. Y. His appointment became effective on May 1.

**A. T. Wade**, division freight agent on the Louisville & Nashville at Birmingham, Ala., has been promoted to general freight

agent, with headquarters at Louisville, Ky., succeeding **C. H. Ryan, Jr.**, deceased. **J. C. Willis**, general agent at San Francisco, Cal., has been appointed division freight agent at Birmingham, to succeed Mr. Wade, and has been succeeded by **G. W. Phelps**. **J. E. Power**, commercial agent at Houston, Tex., has been appointed general agent at Chicago, succeeding **E. H. Wigand**, who has been made division freight agent at Atlanta, Ga., where he replaces **M. C. Browning**, who has been transferred to Lexington, Ky., to replace **J. H. Fitch**, deceased. **J. R. Almand**, division passenger agent at Cincinnati, Ohio, has resigned, and has been succeeded by **H. E. Porter**, as reported in the *Railway Age* of April 18.

## MECHANICAL

**W. L. Gorton**, district road foreman of engines and fuel supervisor of the eastern district of the Erie, with headquarters at Jersey City, N. J., has been appointed supervisor of fuel and locomotive opera-

### Wanted—A New Theory of Rate-Making

Only a monopoly may disregard individual costs in the pricing of its products. Once the monopoly is attacked by competition, it loses that business upon which it has been making a large profit and retains that upon which it has been sustaining a loss; prices tend to be driven toward a definite relationship with costs in both directions; those that were high are lowered, those that were low must be raised. . . .

Give to motor trucks even a relatively small percentage of the total traffic—but make that traffic that which carries the highest rates per ton-mile and which is therefore the most profitable—and the delicate balance of the rate structure, which has been termed a "floating mass of relativities," is completely upset. The aggregate net revenues drop in a manner disproportionate to the drop in tonnage. The tendency that follows is to drive all rates toward a direct relationship to costs, in both directions—an unbearable condition.

Is not this whole thing then leading ultimately to the one question, "Can a regulated transportation monopoly be re-established or must a governmental subsidy be employed to make possible continued low cost hauling of raw materials, agricultural products, fuels?"

Is this condition not at the root of the seeming legislative chaos in Washington as far as the rails are concerned? Is it not the groping for a new or an adaptation of the old policy to meet new conditions?

*Is not the freight rate structure with its delicate balance and tremendous economic importance the heart of the railroad problem?*

—E. S. Taliaferro in the *Investment Dealers Digest*

tion of the Erie, succeeding **J. E. Ingling**, deceased. **Frank X. Jones**, road foreman of engines of the eastern district at Jersey City, has been appointed district road foreman and fuel supervisor of the eastern district.

## SPECIAL

**Dr. S. C. Plummer**, chief surgeon of the Chicago, Rock Island & Pacific, with headquarters at Chicago, has retired effective May 1.

## OBITUARY

**August P. Bixler**, general auditor of the Pittsburgh & Lake Erie, with headquarters at Pittsburgh, Pa., who died on March 30 at the Youngstown, Ohio, Hospital, was born on February 6, 1870, at Youngstown. Mr. Bixler was educated in the public schools of Youngstown and entered railway service in April, 1888, as yard clerk for the Pittsburgh & Lake Erie. In November, 1892, he was transferred to Pittsburgh as clerk in the transportation department. In January, 1899, he became chief clerk; in January, 1903, traveling auditor; and in February, 1904, assistant auditor. Mr. Bixler became auditor in January, 1921, and general auditor in June, 1924. He was in the continuous service of the Pittsburgh & Lake Erie for 48 years, and in addition, during the last 21 years his duties included the supervision of accounting on the Lake Erie & Eastern.

**H. C. Stauffer**, general freight traffic manager of the Reading, with headquarters at Philadelphia, Pa., died at his home in Glenside, Pa., on April 28. Mr. Stauffer was in his 68th year. He entered the service of the Reading as an agent at Kimberton, Pa., serving in the same capac-



H. C. Stauffer

ity successively at Byers, Douglassville, Chester and Reading, Pa. He was advanced to the position of division freight agent at Reading Terminal, Philadelphia, in February, 1910. In April, 1920, he was appointed general coal and freight agent, holding this position until May, 1921, when he was appointed general freight agent. Mr. Stauffer became freight traffic manager on April 3, 1923, serving in this capacity until his appointment as general freight traffic manager in May, 1928.



# UNION PACIFIC RAILROAD COMPANY

## THIRTY-NINTH ANNUAL REPORT — YEAR ENDED DECEMBER 31, 1935

### TO THE STOCKHOLDERS OF UNION PACIFIC RAILROAD COMPANY:

The Board of Directors submits the following report of the operations and affairs of the Union Pacific Railroad Company for the year ended December 31, 1935, including the Oregon Short Line Railroad Company, whose entire capital stock is owned by the Union Pacific Railroad Company, the Oregon-Washington Railroad & Navigation Company, whose entire capital stock (except qualifying shares held by Directors) is owned by the Oregon Short Line Railroad Company, and the Los Angeles & Salt Lake Railroad Company, whose entire capital stock is owned, one half each, by the Union Pacific Railroad Company and the Oregon Short Line Railroad Company. For convenience,

the four companies are designated by the term "UNION PACIFIC SYSTEM."

### Income

The operated mileage at close of year and income for the year 1935, compared with 1934, after excluding offsetting accounts between the Union Pacific Railroad Co., Oregon Short Line Railroad Co., Oregon-Washington Railroad & Navigation Co., and Los Angeles & Salt Lake Railroad Co., were as follows:

	1935	1934	INCREASE	DECREASE
<b>Operated Mileage at Close of Year</b>				
Miles of road .....	9,572.36	9,779.15		206.79
Miles of additional main track.....	1,542.14	1,542.32		.18
Miles of yard tracks and sidings.....	4,158.72	4,162.85		4.13
<b>Total Mileage Operated.....</b>	<b>15,273.22</b>	<b>15,484.32</b>		<b>211.10</b>
<b>Transportation Operations</b>				
Operating revenues .....	\$129,404,941.39	\$120,437,499.09	\$8,967,442.30	
Operating expenses .....	93,401,644.45	83,567,403.13	9,834,241.32	
Revenues over expenses.....	\$36,003,296.94	\$36,870,095.96		\$866,799.02
Taxes .....	9,967,675.57	10,940,524.24		972,848.67
Uncollectible railway revenues.....	45,932.69	16,535.25	\$29,397.44	
<b>Railway Operating Income.....</b>	<b>\$25,989,688.68</b>	<b>\$25,913,036.47</b>	<b>\$76,652.21</b>	
Rents from use of joint tracks, yards, and terminal facilities.....	1,690,190.59	1,712,385.59		\$22,195.00
	<u>\$27,679,879.27</u>	<u>\$27,625,422.06</u>	<u>\$54,457.21</u>	
Hire of equipment—debit balance.....	\$6,865,088.52	\$7,012,168.69		\$147,080.17
Rents for use of joint tracks, yards, and terminal facilities.....	2,199,722.42	2,168,869.34	\$30,853.08	
	<u>\$9,064,810.94</u>	<u>\$9,181,038.03</u>		<u>\$116,227.09</u>
<b>Net Income from Transportation Operations.....</b>	<b>\$18,615,068.33</b>	<b>\$18,444,384.05</b>	<b>\$170,684.30</b>	
<b>Income from Investments and Sources other than Transportation Operations</b>				
Dividends on stocks owned.....	\$9,739,351.47	\$9,530,685.91	\$208,665.56	
Interest on bonds, notes, and equipment trust certificates owned.....	4,589,050.61	5,203,419.77		\$614,369.16
Rents from lease of road.....	120,139.82	120,303.40		163.58
Miscellaneous rents .....	332,640.63	329,360.00	3,280.63	
Miscellaneous income .....	471,985.64	339,394.05	132,591.59	
<b>Total .....</b>	<b>\$15,253,168.17</b>	<b>\$15,523,163.13</b>		<b>\$269,994.96</b>
<b>Total Income .....</b>	<b>\$33,868,236.50</b>	<b>\$33,967,547.16</b>		<b>\$99,310.66</b>
<b>Fixed and Other Charges</b>				
Interest on funded debt.....	\$14,438,173.37	\$14,563,023.83		\$124,850.46
Interest on loans and open accounts—balance.....	82,008.36	20,963.76	\$61,044.60	
Miscellaneous rents .....	6,977.50	7,593.43		615.93
Miscellaneous charges .....	805,548.11	660,617.36	144,930.75	
<b>Total .....</b>	<b>\$15,332,707.34</b>	<b>\$15,252,198.38</b>	<b>\$80,508.96</b>	
<b>Net Income from All Sources.....</b>	<b>\$18,535,529.16</b>	<b>\$18,715,348.78</b>		<b>\$179,819.62</b>
<b>DISPOSITION OF NET INCOME</b>				
<b>Dividends on Stock of Union Pacific Railroad Co.:</b>				
<b>Preferred stock:</b>				
2 per cent paid April 1, 1935.....	\$1,990,862.00			
2 per cent paid October 1, 1935.....	1,990,862.00	\$3,981,724.00	\$3,981,724.00	
<b>Common stock:</b>				
1½ per cent paid April 1, 1935.....	\$3,334,365.00			
1½ per cent paid July 1, 1935.....	3,334,365.00			
1½ per cent paid October 1, 1935.....	3,334,365.00			
1½ per cent payable January 2, 1936.....	3,334,365.00	13,337,460.00	13,337,460.00	
<b>Total Dividends .....</b>	<b>\$17,319,184.00</b>	<b>\$17,319,184.00</b>		
Sinking Fund Requirements.....	10,000.00	10,000.00		
<b>Total Appropriations of Net Income.....</b>	<b>\$17,329,184.00</b>	<b>\$17,329,184.00</b>		
<b>Surplus, Transferred to Profit and Loss.....</b>	<b>\$1,206,345.16</b>	<b>\$1,386,164.78</b>		<b>\$179,819.62</b>

### Expenditures Chargeable to Investment in Road and Equipment

Extensions and Branches.....	\$211,939.68
Additions and Betterments (excluding equipment).....	3,502,129.04
Equipment .....	6,156,133.20
<b>Total Expenditures.....</b>	<b>\$9,870,201.92</b>
<b>Credits to Investment in Road and Equipment for retirements:</b>	
Cost of property retired and not replaced.....	\$6,389,117.60
Cost of equipment retired.....	4,382,678.72
<b>Total Credits .....</b>	<b>\$10,771,796.32</b>
<b>Net Decrease in "Investment in Road and Equipment".....</b>	<b>\$901,594.40</b>

[Advertisement]

## Operating Results for Year 1935 Compared with Year 1934

	1935	1934	INCREASE	DECREASE	PER CENT
Average miles of road operated.....	9,583.42	9,783.85	.....	200.43	2.0
<b>OPERATING REVENUES</b>					
1. Freight .....	\$106,960,617.03	\$100,527,120.17	\$6,433,496.86	.....	6.4
2. Passenger .....	11,172,152.95	9,239,900.82	1,932,252.13	.....	20.9
3. Mail .....	4,419,380.16	4,236,617.68	182,762.48	.....	4.3
4. Express .....	1,808,053.36	1,764,339.88	43,713.48	.....	2.5
5. Other passenger-train .....	1,893,179.01	1,556,621.79	336,557.22	.....	21.6
6. Other train .....	202,861.38	169,289.25	33,572.13	.....	19.8
7. Switching .....	1,012,803.92	1,067,992.25	.....	\$55,188.33	5.2
8. Water line .....	16,637.96	24,692.66	.....	8,055.00	32.6
9. Other .....	1,919,255.92	1,850,924.59	68,331.33	.....	3.7
10. Total operating revenues.....	\$129,404,941.39	\$120,437,499.09	\$8,967,442.30	.....	7.4
<b>OPERATING EXPENSES</b>					
11. Maintenance of way and structures.....	\$15,509,973.39	\$12,422,934.84	\$3,087,038.55	.....	24.8
12. Maintenance of equipment.....	23,924,089.05	22,482,976.43	1,441,112.62	.....	6.4
13. Total maintenance .....	\$39,434,062.44	\$34,905,911.27	\$4,528,151.17	.....	13.0
14. Traffic .....	3,325,786.79	2,818,134.04	507,652.75	.....	18.0
15. Transportation—rail line .....	43,232,584.59	37,513,940.70	5,718,643.89	.....	15.2
16. Transportation—water line .....	10,250.09	10,843.51	.....	\$593.42	5.5
17. Miscellaneous operations .....	2,325,385.25	1,677,910.56	647,474.69	.....	38.6
18. General .....	5,081,960.80	6,640,663.05	.....	1,558,702.25	23.5
19. Transportation for investment—Credit.....	8,385.51	.....	8,385.51	.....	...
20. Total operating expenses.....	\$93,401,644.45	\$83,567,403.13	\$9,834,241.32	.....	11.8
21. Revenues over expenses.....	\$36,003,296.94	\$36,870,095.96	.....	\$866,799.02	2.4

*This table continued at top of opposite page*

## General Balance Sheet — Assets

(Excluding offsetting securities and accounts between the Union Pacific Railroad Co., Oregon Short Line Railroad Co., Oregon-Washington Railroad & Navigation Co., and Los Angeles & Salt Lake Railroad Co.)

	December 31, 1935.	December 31, 1934.	INCREASE.	DECREASE.
<b>Investments:</b>				
Road and Equipment.....	\$915,872,783.30	\$916,774,377.70	.....	\$901,594.40
Less:				
Receipts from improvement and equipment fund.....	\$23,823,091.13	\$23,823,091.13	.....	.....
Appropriations from income and surplus prior to July 1, 1907, credited to this account.....	13,310,236.52	13,310,236.52	.....	.....
Total .....	\$37,133,327.65	\$37,133,327.65	.....	.....
701. Investment in road and equipment.....	<b>\$878,739,455.65</b>	<b>\$879,641,050.05</b>	.....	<b>\$901,594.40</b>
704. DEPOSITS IN LIEU OF MORTGAGED PROPERTY SOLD.....	\$185,740.18	\$491,549.01	.....	\$305,808.83
705. MISCELLANEOUS PHYSICAL PROPERTY.....	2,561,298.56	2,448,945.28	\$112,353.28	.....
Total .....	\$2,747,038.74	\$2,940,494.29	.....	\$193,455.55
706. Investments in affiliated companies:				
Stocks .....	\$25,189,433.13	\$25,004,808.57	\$184,624.56	.....
Bonds, notes, and equipment trust certificates.....	14,786,110.05	16,064,615.79	.....	\$1,278,505.74
Advances .....	17,554,726.27	18,844,061.40	.....	1,289,335.13
Total .....	\$57,530,269.45	\$59,913,485.76	.....	\$2,383,216.31
707. Investments in other companies:				
Stocks .....	\$79,157,246.70	\$79,157,156.70	\$90.00	.....
Bonds, notes, and equipment trust certificates.....	73,433,747.72	75,212,479.75	.....	\$1,778,732.03
Total .....	\$152,590,994.42	\$154,369,636.45	.....	\$1,778,642.03
UNITED STATES GOVERNMENT BONDS AND NOTES.....	\$23,847,082.76	\$23,919,537.82	.....	\$72,455.06
703. SINKING FUNDS.....	\$268,948.29	\$206,914.79	\$62,033.50	.....
Total Investments .....	<b>\$1,115,723,789.31</b>	<b>\$1,120,991,119.16</b>	.....	<b>\$5,267,329.85</b>
<b>Current Assets:</b>				
708. CASH .....	\$24,977,190.19	\$23,942,874.96	\$1,034,315.23	.....
710. TIME DRAFTS AND DEPOSITS.....	400,000.00	400,000.00	.....	.....
711. SPECIAL DEPOSITS .....	59,661.86	67,175.35	.....	\$7,513.49
712. LOANS AND BILLS RECEIVABLE.....	33,676.74	30,970.39	2,706.35	.....
713. TRAFFIC AND CAR SERVICE BALANCES RECEIVABLE.....	3,703,444.95	2,960,680.14	742,764.81	.....
714. NET BALANCE RECEIVABLE FROM AGENTS AND CONDUCTORS.....	1,015,768.48	1,064,353.77	.....	48,585.29
715. MISCELLANEOUS ACCOUNTS RECEIVABLE.....	4,004,003.66	4,967,728.08	.....	963,724.42
716. MATERIAL AND SUPPLIES .....	16,752,254.55	15,361,317.12	1,390,937.43	.....
717. INTEREST AND DIVIDENDS RECEIVABLE.....	1,199,659.00	1,382,973.78	.....	183,314.78
718. RENTS RECEIVABLE.....	97,195.66	144,721.55	.....	47,525.89
719. OTHER CURRENT ASSETS:				
Baltimore and Ohio Railroad Co. capital stock applicable to pay- ment of extra dividend of 1914.....	115,263.70	117,191.70	.....	1,928.00
Miscellaneous items.....	10,907.57	31,179.65	.....	20,272.08
Total Current Assets.....	\$52,369,026.36	\$50,471,166.49	\$1,897,859.87	.....
<b>Deferred Assets:</b>				
720. WORKING FUND ADVANCES.....	\$69,224.62	\$69,973.39	.....	\$748.77
722. OTHER DEFERRED ASSETS.....	3,201,093.03	2,738,466.30	\$462,626.73	.....
Total Deferred Assets.....	\$3,270,317.65	\$2,808,439.69	\$461,877.96	.....
<b>Unadjusted Debits:</b>				
723. RENTS AND INSURANCE PREMIUMS PAID IN ADVANCE.....	\$1,695.09	\$1,962.82	.....	\$267.73
725. DISCOUNT ON FUNDED DEBT.....	794,992.64	826,686.68	.....	31,694.04
727. OTHER UNADJUSTED DEBITS.....	508,824.48	663,184.30	.....	154,359.82
Total Unadjusted Debits.....	\$1,305,512.21	\$1,491,833.80	.....	\$186,321.59
<b>Grand Total .....</b>	<b>\$1,172,668,645.53</b>	<b>\$1,175,762,559.14</b>	.....	<b>\$3,093,913.61</b>

[Advertisement]

## Operating Results for Year 1935 Compared with Year 1934—Continued

	1935	1934	INCREASE	DECREASE	PER CENT
<b>TAXES</b>					
22. State and county.....	\$9,040,217.55	\$9,695,581.06	.....	\$655,363.51	6.8
23. Federal income .....	608,848.65	986,680.74	.....	377,832.09	38.3
24. Federal capital stock.....	288,826.92	234,252.00	\$54,574.92	.....	23.3
25. All other federal.....	29,782.45	24,010.44	5,772.01	.....	24.0
26. Total taxes .....	\$9,967,675.57	\$10,940,524.24	.....	\$972,848.67	8.9
27. Uncollectible railway revenues.....	\$45,932.69	\$16,535.25	\$29,397.44	.....	177.8
28. Railway operating income.....	\$25,989,688.68	\$25,913,036.47	\$76,652.21	.....	.3
29. Equipment rents (debit).....	6,555,088.52	7,012,168.69	.....	\$147,080.17	2.1
30. Joint facility rents (debit).....	509,531.83	456,483.75	53,048.08	.....	11.6
31. Net railway operating income.....	\$18,615,068.33	\$18,444,384.03	\$170,684.30	.....	.9
Per cent—Operating expenses of operating revenues.....	72.18	69.30	2.79	.....	4.0
<b>FREIGHT TRAFFIC—(Commercial Freight only)</b>					
Tons of revenue freight carried.....	22,614,691	21,011,051	1,603,640	.....	7.6
Ton-miles, revenue freight.....	10,363,530.156	9,422,936.359	940,593,797	.....	10.0
Average distance hauled per ton (miles).....	458.27	448.48	9.79	.....	2.2
Average revenue per ton-mile (cents).....	1.032	1.067	.....	.035	3.3
Average revenue per freight-train mile.....	\$5.33	\$5.37	.....	\$.04	.7
<b>PASSENGER TRAFFIC—(Excludes Motor Train, other than Streamlined Train)</b>					
Revenue passengers carried.....	1,510,195	1,217,001	293,194	.....	24.1
Revenue passengers carried one mile.....	647,613.293	519,437.248	128,176,045	.....	24.7
Average distance hauled per passenger (miles).....	428.83	426.82	2.01	.....	.5
Average passengers per passenger-train mile.....	58.78	57.82	.96	.....	1.7
Average revenue per passenger-mile (cents).....	1.701	1.751	.....	.050	2.9
Average revenue per passenger-train mile, passengers only.....	\$1.00	\$1.01	.....	\$.01	1.0
Average total revenue per passenger-train mile.....	\$1.68	\$1.76	.....	\$.08	4.5

## General Balance Sheet — Liabilities

(Excluding offsetting securities and accounts between the Union Pacific Railroad Co., Oregon Short Line Railroad Co., Oregon-Washington Railroad & Navigation Co., and Los Angeles & Salt Lake Railroad Co.)

	December 31, 1935.	December 31, 1934.	INCREASE.	DECREASE.
751. Capital Stock				
Common stock .....	\$222,292,500.00	\$222,292,500.00		
Preferred stock .....	99,543,100.00	99,543,100.00		
Total Capital Stock.....	\$321,835,600.00	\$321,835,600.00		
755. Funded Debt .....	343,708,675.00	345,952,010.00		\$2,243,335.00
Total .....	\$665,544,275.00	\$667,787,610.00		\$2,243,335.00
754. Grants in Aid of Construction.....	\$4,170,768.73	\$1,817,491.40	\$2,353,277.33	
757. Nonnegotiable Debt to Affiliated Companies.....	\$11,145,589.43	\$11,699,629.48		\$554,040.05
Current Liabilities:				
759. TRAFFIC AND CAR SERVICE BALANCES PAYABLE.....	\$1,520,664.02	\$1,452,965.03	\$67,698.99	
760. AUDITED ACCOUNTS AND WAGES PAYABLE.....	7,477,481.22	6,497,962.41	979,518.81	
761. MISCELLANEOUS ACCOUNTS PAYABLE.....	157,808.37	137,345.96	20,462.41	
762. INTEREST MATURED UNPAID:				
Coupons matured, but not presented.....	104,139.11	97,404.94	6,734.17	
Coupons and interest on registered bonds, due first proximo.....	4,416,927.50	4,416,925.70	1.80	
763. DIVIDENDS MATURED UNPAID:				
Dividends due but uncalled for.....	137,622.07	134,978.33	2,643.74	
Extra dividend on common stock declared January 8, 1914, payable to stockholders of record March 2, 1914, unpaid.....	124,242.78	126,327.97		\$2,085.19
Dividend on common stock payable second proximo.....	3,334,365.00	3,334,365.00		
764. FUNDED DEBT MATURED UNPAID.....	8,175.00	17,300.00		9,125.00
766. UNMATURED INTEREST ACCRUED.....	1,407,537.41	1,430,193.67		22,656.26
767. UNMATURED RENTS ACCRUED.....	279,167.25	291,007.01		11,839.76
768. OTHER CURRENT LIABILITIES.....	157,632.19	176,952.35		19,320.16
Total Current Liabilities.....	\$19,125,761.92	\$18,113,728.37	\$1,012,033.55	
Deferred Liabilities:				
770. OTHER DEFERRED LIABILITIES.....	\$7,673,144.71	\$8,006,472.10		\$333,327.39
771. TAX LIABILITY.....	5,408,733.34	6,482,906.31		1,074,172.97
Total Deferred Liabilities.....	\$13,081,878.05	\$14,489,378.41		\$1,407,500.36
Unadjusted Credits:				
773. INSURANCE RESERVE:				
Reserve for fire insurance.....	\$6,916,099.74	\$6,400,090.18	\$516,009.56	
776. RESERVE FOR DEPRECIATION.....	103,104,787.45	99,313,726.43	3,791,061.02	
778. OTHER UNADJUSTED CREDITS:				
Contingent interest.....	1,183,421.54	1,737,780.16		\$554,358.62
Miscellaneous items.....	1,106,074.75	2,228,391.49		* 1,122,316.74
Total Unadjusted Credits.....	\$112,310,383.48	\$109,679,988.26	\$2,630,395.22	
Total Liabilities .....	\$825,378,656.61	\$823,587,825.92	\$1,790,830.69	
Surplus:				
APPROPRIATED FOR ADDITIONS AND BETTERMENTS.....	\$30,604,196.47	\$30,593,297.52	\$10,898.95	
RESERVED FOR DEPRECIATION OF SECURITIES.....	34,972,570.88	34,972,570.88		
FUNDED DEBT RETIRED THROUGH INCOME AND SURPLUS.....	536,828.66	536,828.66		
SINKING FUND RESERVES.....	278,948.29	221,312.29	57,636.00	
Total Appropriated Surplus.....	\$66,392,544.30	\$66,324,009.35	\$68,534.95	
784. Profit and Loss—Credit Balance.....	249,224,550.40	254,177,829.65		\$4,953,279.25
Total Surplus .....	\$315,617,094.70	\$320,501,839.00		\$4,884,744.30
As this consolidated balance sheet excludes all intercompany items, securities of the Los Angeles & Salt Lake Railroad Company owned by other system companies are not included. The difference between the par and face value of such securities as carried on the books of the Los Angeles & Salt Lake (less unextinguished discount on the bonds and discount charged to Profit and Loss but added back in consolidating the accounts) and the amounts at which the securities are carried on the books of the owning companies is set up here to balance.....	\$31,672,894.22	\$31,672,894.22		
Grand Total .....	\$1,172,668,645.53	\$1,175,762,559.14		\$3,093,913.61

[Advertisement]

Table of Freight Operating Statistics  
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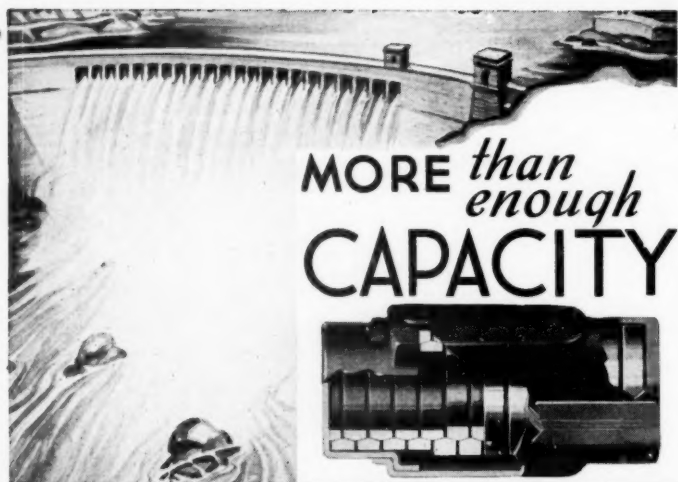
## Freight Operating Statistics of Large Steam Railways—Selected Items for the Month of January,

Region, road, and year	Miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)		Number of road locomotives on line					
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross, excluding locomotives and tenders	Net, revenue and non-revenue	Serviceable		Un-servicable	Per cent un-servicable		
									Not stored	Stored				
New England Region:														
Boston & Albany.....	1936	373	144,487	151,998	12,044	3,081	69.8	161,050	58,164	54	3	35	28.0	
	1935	402	137,575	142,902	10,158	2,934	70.0	154,078	55,578	60	3	33	34.4	
Boston & Maine.....	1936	1,972	281,405	316,329	31,291	9,097	69.5	504,366	191,299	124	3	167	56.8	
	1935	2,016	277,839	311,674	32,877	8,509	68.8	472,677	180,669	94	1	180	65.5	
N. Y., New Hav. & Hartf..	1936	2,038	356,186	434,817	23,202	10,815	65.6	600,494	227,378	182	7	102	35.2	
	1935	2,045	348,555	421,003	24,529	10,213	66.9	563,014	217,847	176	31	113	35.3	
Great Lakes Region:														
Delaware & Hudson.....	1936	831	215,375	297,049	37,637	7,004	64.2	444,713	213,300	120	113	29	11.1	
	1935	835	218,574	294,568	32,297	6,838	61.5	445,815	210,497	112	127	32	11.8	
Del., Lack. & Western....	1936	992	371,572	422,046	60,957	11,256	65.4	675,382	272,890	159	1	80	33.3	
	1935	992	357,931	401,797	54,489	10,860	65.3	651,446	264,097	153	34	88	32.0	
Erie (incl. Chi. & Erie)....	1936	2,298	665,763	707,368	40,931	26,854	67.4	1,562,619	623,361	230	29	220	45.9	
	1935	2,305	653,968	691,726	41,780	25,790	64.4	1,586,203	627,919	233	84	165	34.2	
Grand Trunk Western.....	1936	1,027	246,787	251,984	3,407	6,432	63.5	386,416	140,010	79	..	62	44.0	
	1935	1,007	214,898	217,888	2,533	5,654	61.6	342,449	119,908	65	..	78	54.5	
Lehigh Valley .....	1936	1,318	405,306	434,008	49,744	12,203	66.9	746,846	316,948	143	1	147	50.5	
	1935	1,335	384,470	410,000	38,609	11,424	65.8	714,418	303,654	174	21	116	37.3	
New York Central.....	1936	10,789	2,803,564	2,961,133	185,714	87,751	60.7	5,693,597	2,386,992	957	27	533	35.1	
	1935	11,009	2,519,598	2,636,791	153,971	79,701	60.3	5,170,644	2,151,711	815	41	656	43.4	
N. Y., Chi. & St. Louis.....	1936	1,674	485,352	499,643	8,108	15,210	64.4	919,129	355,930	155	12	24	12.6	
	1935	1,661	455,198	456,817	4,688	14,287	63.4	861,664	327,484	139	40	12	6.3	
Pere Marquette .....	1936	2,081	392,019	409,385	5,803	9,303	59.9	606,113	220,115	110	1	41	27.0	
	1935	2,096	347,453	367,546	3,643	8,317	59.5	544,470	205,345	111	8	39	24.7	
Pittsburgh & Lake Erie.....	1936	234	74,568	76,777	7	2,604	57.9	217,566	117,293	29	14	25	36.8	
	1935	234	63,736	66,254	37	2,488	57.2	208,914	112,378	28	14	29	40.8	
Wabash .....	1936	2,435	573,609	587,016	12,414	16,450	64.9	968,235	344,406	134	26	153	48.9	
	1935	2,435	562,795	574,132	12,233	15,864	60.9	960,152	319,902	134	27	168	51.1	
Central Eastern Region:														
Baltimore & Ohio.....	1936	6,367	1,423,155	1,760,873	185,122	39,340	62.7	2,696,480	1,237,087	660	26	612	47.1	
	1935	6,321	1,318,077	1,597,605	173,831	36,498	61.1	2,518,221	1,139,147	583	169	553	42.4	
Central of New Jersey.....	1936	681	152,213	172,840	32,167	4,824	60.5	341,558	169,259	63	3	89	57.4	
	1935	688	142,902	161,935	33,532	4,679	59.2	336,480	166,041	66	4	95	57.6	
Chicago & Eastern Illinois.....	1936	931	186,348	186,761	3,492	4,330	63.9	292,923	130,530	59	..	52	46.8	
	1935	939	181,902	182,474	2,940	3,897	61.1	271,386	121,276	42	6	58	54.7	
Elgin, Joliet & Eastern.....	1936	434	101,241	104,623	1,821	2,333	61.8	180,718	91,238	53	..	34	38.7	
	1935	446	89,772	91,986	1,507	1,994	57.7	161,240	79,817	50	9	29	32.3	
Long Island.....	1936	393	30,247	30,917	15,938	242	50.4	19,637	7,967	36	4	13	24.5	
	1935	393	31,903	32,932	14,872	281	54.0	22,129	9,210	44	..	22	33.3	
Pennsylvania System .....	1936	9,801	2,941,106	3,361,639	378,599	92,700	61.9	6,332,492	2,840,999	1,351	96	990	40.6	
	1935	10,009	2,600,652	2,921,264	321,229	86,111	61.5	5,861,686	2,627,319	1,210	251	977	40.1	
Reading .....	1936	1,449	446,404	486,811	57,691	11,367	60.7	838,522	408,928	202	52	91	26.4	
	1935	1,453	414,929	453,332	49,919	11,083	59.8	815,112	400,718	195	70	98	27.0	
Pocahontas Region:														
Chesapeake & Ohio.....	1936	3,050	864,244	912,857	39,954	35,020	55.9	2,979,533	1,621,921	400	49	88	16.4	
	1935	3,061	788,591	833,597	36,117	31,930	55.5	2,716,984	1,463,058	363	106	106	18.4	
Norfolk & Western.....	1936	2,145	671,887	712,946	37,365	25,193	59.5	2,088,176	1,117,956	273	52	54	14.2	
	1935	2,160	588,118	617,502	30,511	22,104	58.8	1,815,411	946,741	228	121	34	8.9	
Southern Region:														
Atlantic Coast Line.....	1936	5,101	573,583	574,892	7,676	11,975	62.0	658,038	220,321	247	23	139	34.0	
	1935	5,148	516,671	518,111	6,767	10,272	61.7	550,794	185,779	252	59	145	31.8	
Central of Georgia.....	1936	1,886	239,815	241,149	3,818	4,934	71.4	271,020	103,267	89	..	34	27.6	
	1935	1,886	217,670	218,574	3,696	4,577	72.3	245,122	95,697	95	1	46	32.4	
Illinois Central (incl. Y. & M. V.).....	1936	6,570	1,574,104	1,586,615	31,055	35,647	63.4	2,352,706	1,012,262	594	12	230	27.5	
	1935	6,587	1,415,620	1,422,953	27,946	31,683	61.6	2,117,967	903,489	601	4	320	34.6	
Louisville & Nashville.....	1936	5,007	1,151,497	1,251,690	39,186	24,692	60.1	1,767,573	864,265	359	4	219	37.6	
	1935	5,049	993,134	1,071,805	29,395	21,447	59.9	1,506,119	726,492	323	11	255	43.3	
Seaboard Air Line.....	1936	4,295	476,282	484,442	3,913	11,278	64.2	665,884	235,202	229	1	101	30.5	
	1935	4,295	449,053	453,892	3,810	9,976	63.9	581,458	202,777	224	10	113	32.6	
Southern .....	1936	6,596	1,220,971	1,239,587	21,327	26,132	66.4	1,481,431	588,639	447	49	312	38.6	
	1935	6,599	1,092,791	1,108,199	18,576	23,917	65.4	1,351,067	522,941	406	95	335	40.1	
Northwestern Region:														
Chi. & North Western.....	1936	8,355	955,594	1,008,501	32,397	23,044	64.5	1,418,943	518,535	430	75	267	34.6	
	1935	8,428	907,530	967,637	26,470	21,031	62.0	1,313,440	451,742	402	138	286	34.6	
Chicago Great Western.....	1936	1,458	240,719	242,096	8,647	6,681	63.6	404,345	149,665	60	1	28	31.5	
	1935	1,456	225,081	225,701	7,669	6,009	62.0	374,209	139,239	58	1	38	39.2	
Chi., Milw., St. P. & Pac.....	1936	11,115	1,332,361	1,432,489	73,612	32,506	61.5	2,099,597	863,453	498	61	139	19.9	
	1935	11,152	1,214,114	1,286,399	65,353	28,289	59.4	1,831,389	731,018	379	119	187	27.3	
Chi., St. P., Minneap. & Om.....	1936	1,641	238,212	251,117	13,263	4,712	62.3	304,571	129,075	100	12	23	17.1	
	1935	1,644	229,050	240,147	13,110	4,103	61.7	261,749	106,669	72	45	43	26.9	
Great Northern .....	1936	8,081	699,657	692,829	23,956	19,112	64.8	1,204,376	505,342	337	88	173	28.9	
	1935	8,302	703,474	709,820	22,112	18,472	64.3	1,145,326	468,501	340	88	169	28.3	
Minneap., St. P. & S. St. M.....	1936	4,273	364,164	371,774	4,393	7,222	68.7	420,197	176,511	125	..	30	19.4	
	1935	4,274	369,230	375,021	2,683	6,461	62.4	372,727	145,229	125	..	43	25.6	
Northern Pacific .....	1936	6,429	636,931	687,958	46,069	17,649	68.4	1,051,223	457,231	337	24	94	20.7	
	1935	6,416	582,553	634,043	40,349	15,803	67.5	932,262	387,939	348	15	93	20.4	
Central Western Region:														
Alton .....	1936	928	199,947	204,138	1,984	3,996	62.1	255,892	94,618	70	2	28	28.0	
	1935	921	177,591	181,329	2,193	3,672	57.4	245,324	86,703	43	4	42	47.2	
Atch., Top. & S. Fe (incl. G.C. & S.F. & P. & S.F.).....	1936	13,235	1,644,867	1,744,455	65,863	42,010	63.3	2,572,046	872,971	516	97	365	37.3	
	1935	13,324	1,555,600	1,631,480	62,149	41,042	64.0	2,435,151	807,886	485	168	354	35.1	
Chicago, Burl. & Quincy.....	1936	8,969	1,328,235	1,38										

## 1936, Compared with January, 1935, for Roads with Annual Operating Revenues Above \$25,000,000

Region, road, and year	Number of freight cars on line			Per cent un-serv-ice-able	Gross ton-miles per train-hour, excluding locomotives and tenders		Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Loco-motive-miles per locomotive-day	
	Home	Foreign	Total		Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders								
New England Region:														
Boston & Albany.....	1936	2,243	4,531	6,774	22.4	18,943	1,122	405	18.9	271	20.5	5,029	178	57.5
	1935	2,769	4,126	6,895	24.8	18,820	1,128	407	18.9	264	19.9	4,463	184	51.4
Boston & Maine.....	1936	8,264	7,805	16,069	15.3	23,668	1,799	682	21.0	384	26.2	3,130	123	38.1
	1935	8,321	9,360	17,681	20.7	22,191	1,714	655	21.2	330	22.6	2,891	128	40.4
N. Y., New Hav. & Hartf.....	1936	13,295	12,357	25,652	17.0	24,258	1,724	653	21.0	286	20.7	3,598	122	50.8
	1935	15,304	11,202	26,506	13.3	22,672	1,642	638	21.3	263	18.6	3,435	129	44.9
Great Lakes Region:														
Delaware & Hudson.....	1936	8,375	3,119	11,494	4.2	27,741	2,076	996	30.5	599	30.6	8,281	125	41.2
	1935	9,267	2,581	11,848	4.8	27,156	2,055	970	30.8	573	30.3	8,129	126	38.9
Del., Lack. & Western.....	1936	13,850	6,017	19,867	18.2	28,731	1,846	746	24.2	443	27.9	8,875	159	64.9
	1935	16,280	4,507	20,787	12.4	29,496	1,845	748	24.3	410	25.8	8,589	163	53.6
Erie (incl. Chi. & Erie).....	1936	19,927	11,585	31,512	5.7	37,585	2,365	943	23.2	616	39.4	8,752	117	50.6
	1935	23,543	13,924	37,467	5.9	38,985	2,441	966	24.3	538	34.3	8,788	113	48.7
Grand Trunk Western.....	1936	4,717	7,868	12,585	14.4	28,430	1,576	571	21.8	363	26.2	4,397	112	58.8
	1935	5,226	8,086	13,312	14.8	28,645	1,600	560	22.8	291	22.3	3,842	116	49.7
Lehigh Valley .....	1936	11,810	9,686	21,496	7.6	33,109	1,892	803	26.0	493	28.4	7,757	144	53.4
	1935	13,663	7,683	21,346	11.3	30,530	1,915	814	26.6	459	26.2	7,335	157	46.5
New York Central.....	1936	107,674	65,088	172,762	17.6	32,759	2,052	860	27.2	446	27.0	7,137	122	66.9
	1935	*	*	180,738	19.4	33,330	2,072	862	27.0	384	23.6	6,309	118	59.5
N. Y., Chi. & St. Louis.....	1936	6,956	8,178	15,134	3.8	32,871	1,897	734	23.4	771	51.1	6,858	110	85.8
	1935	9,130	5,529	14,659	4.4	33,912	1,894	720	22.9	690	47.5	6,361	106	77.9
Pere Marquette .....	1936	9,656	7,545	17,201	4.6	24,915	1,546	561	23.7	417	29.4	3,411	112	86.7
	1935	10,953	6,237	17,190	3.5	25,632	1,570	592	24.7	388	26.4	3,161	110	74.8
Pittsburgh & Lake Erie.....	1936	14,859	10,972	25,831	41.8	40,312	2,918	1,573	45.0	146	5.6	16,181	120	36.4
	1935	16,030	9,315	25,345	51.9	42,933	3,278	1,763	45.2	143	5.5	15,513	115	30.1
Wabash .....	1936	10,815	10,492	21,307	3.9	32,921	1,710	608	20.9	525	38.6	4,563	135	61.5
	1935	12,561	8,781	21,342	3.9	34,384	1,725	575	20.2	469	38.3	4,239	131	57.2
Central Eastern Region:														
Baltimore & Ohio.....	1936	69,833	21,927	91,760	19.4	24,158	1,926	884	31.4	435	22.1	6,268	170	48.4
	1935	76,652	18,445	95,097	19.2	24,679	1,940	878	31.2	386	20.3	5,814	166	43.8
Central of New Jersey.....	1936	11,152	10,772	21,924	29.9	26,952	2,333	1,156	35.1	252	11.9	8,015	156	42.7
	1935	14,270	10,966	25,236	29.3	27,298	2,428	1,198	35.5	226	10.8	7,785	151	38.2
Chicago & Eastern Illinois.....	1936	2,660	3,908	6,568	8.9	26,509	1,592	709	30.1	618	32.1	4,521	145	54.8
	1935	3,789	2,515	6,304	12.4	26,583	1,509	674	31.1	620	32.6	4,167	136	56.4
Elgin, Joliet & Eastern.....	1936	8,420	3,602	12,022	5.3	15,566	1,839	929	39.1	245	10.1	6,780	143	39.5
	1935	8,357	2,813	11,170	15.0	15,462	1,847	914	40.0	231	10.0	5,771	143	34.3
Long Island.....	1936	707	3,355	4,062	2.2	5,103	659	267	32.9	7	4.0	655	367	26.3
	1935	763	4,608	5,371	2.6	5,545	711	296	32.8	6	3.6	757	359	23.0
Pennsylvania System .....	1936	203,560	55,658	259,218	16.7	29,997	2,191	983	30.6	353	18.6	9,351	138	49.5
	1935	239,143	43,811	282,954	13.9	31,311	2,291	1,027	30.5	299	16.0	8,467	137	42.9
Reading .....	1936	27,282	10,598	37,880	10.0	23,476	1,884	919	36.0	344	15.7	9,103	160	50.8
	1935	32,749	8,656	41,405	7.7	24,068	1,971	969	36.2	309	14.9	8,897	168	44.4
Pocahontas Region:														
Chesapeake & Ohio.....	1936	36,403	9,191	45,594	2.8	47,157	3,493	1,901	46.3	1,114	43.0	17,155	93	57.2
	1935	41,847	7,993	49,840	1.7	46,949	3,482	1,875	45.8	949	37.2	15,417	87	48.0
Norfolk & Western.....	1936	32,068	4,943	37,011	2.5	45,342	3,143	1,683	44.4	950	36.0	16,814	119	64.8
	1935	35,930	3,689	39,619	2.7	45,947	3,113	1,624	42.8	771	30.6	14,139	114	54.6
Southern Region:														
Atlantic Coast Line.....	1936	22,572	8,537	31,109	20.5	19,847	1,148	384	18.4	229	19.9	1,393	120	45.9
	1935	26,320	7,428	33,748	15.2	13,869	1,069	361	18.1	178	15.9	1,164	128	37.1
Central of Georgia.....	1936	4,787	2,690	7,477	9.6	20,536	1,138	434	20.9	446	29.8	1,767	133	64.3
	1935	7,070	1,883	8,953	27.2	20,881	1,132	442	20.9	372	24.9	1,637	135	50.5
Illinois Central (incl. Y. & M. V.).....	1936	39,216	19,907	59,123	34.1	24,571	1,509	649	28.4	552	30.7	4,970	153	62.4
	1935	42,319	15,975	58,294	33.8	24,623	1,508	643	28.5	499	28.4	4,425	149	50.6
Louisville & Nashville.....	1936	36,420	8,884	45,304	25.9	22,959	1,538	752	35.0	600	28.5	5,568	150	71.5
	1935	43,846	7,984	51,830	33.4	23,137	1,520	733	33.9	452	22.3	4,641	154	60.3
Seaboard Air Line.....	1936	10,541	5,894	16,435	3.2	23,153	1,422	502	20.9	454	33.9	1,766	130	47.8
	1935	11,547	5,096	16,643	3.9	21,271	1,315	459	20.3	389	29.9	1,523	133	43.5
Southern .....	1936	26,240	17,395	43,635	18.5	19,538	1,223	486	22.5	436	29.2	2,879	167	50.2
	1935	28,178	13,624	41,802	15.1	20,184	1,244	481	21.9	405	28.3	2,556	160	43.5
Northwestern Region:														
Chi. & North Western.....	1936	38,997	24,201	63,198	8.4	21,175	1,489	544	22.5	273	18.8	2,002	157	43.5
	1935	42,900	22,922	65,192	13.1	21,256	1,454	500	21.5	226	17.0	1,729	157	38.6
Chicago Great Western.....	1936	1,912	4,525	6,437	3.3	27,317	1,682	622	22.4	749	52.5	3,311	156	89.4
	1935	2,948	3,362	6,310	4.3	28,981	1,665	620	23.2	711	49.5	3,085	153	77.6
Chi., Milw., St. P. & Pac.....	1936	46,654	21,759	68,413	3.3	24,175	1,584	652	26.6	416	25.4	2,506	147	70.1
	1935	52,246	15,394	67,640	3.3	23,396	1,516	605	25.8	349	22.6	2,114	147	63.7
Chi., St. P., Minneap. & Om.....	1936	3,706	5,794	9,500	15.5	16,129	1,286	545	27.4	438	25.6	2,537	149	63.2
	1935	2,139	7,410	9,549	18.4	15,185	1,147	467	26.0	360	22.4	2,093	153	51.1
Great Northern .....	1936	38,188	9,504	47,692	8.3	25,016	1,733	727	26.4	338	19.7	2,017	148	38.4
	1935	42,230	9,566	51,796	7.4	23,632	1,639	670	25.4	290	17.8	1,820	165	39.4
Minneap., St. P. & S. St. M.....	1936	12,369	4,475	16,844	4.7	17,649	1,159	487	24.4	336	20.0	1,333	134	77.5
	1935	13,466	3,581	17,047	6.4	14,958	1,014	395	22.5	277	19.8	1,096	147	75.4
Northern Pacific .....	1936	30,231	5,102	35,333	10.8	24,912	1,654	719	25.9	408	23.1	2,294	173	51.8
	1935	34,813	4,821	39,634	11.2	23,793	1,606	668	24.5	313	18.9	1,950	190	48.0
Central Western Region:														
Alton .....	1936	2,511	6,184	8,695	27.1	28,895	1,284	475	23.7	351	23.9	3,288	152	66.5
	1935	3,193	5,942	9,135	27.6	30,858	1,386	490	23.6	306	22.6	3,036	137	66.5
Atch., Top. & S. Fe (incl. G.C. & S.F. & P. & S.F.).....	1936	69,671	10,804	80,475	11.1	29,364								





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